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BRITISH MEDICAL JOURNAL

LONDON SATURDAY MAY 30 1953

MEDICINE IN THE TIME OF QUEEN ELIZABETH THE FIRST

BY

Sir ARTHUR S. MacNALTY, K.C.B., M.A., D.M., F.R.C.P., F.R.C.S.

Queen Elizabeth I, "of famous memory," as Carlyle styled her, like her royal father, Henry VIII, encouraged the progress of medicine and surgery and the natural sciences in her illustrious reign. She had, as Francis Bacon states, "a love and reverence towards learning," and bestowed the sun of her favour on physicians and surgeons, although she was chary of granting dignities and rewards for their services. In her time there were three classes of medical practitioners: the physician, who was just ceasing to be an ecclesiastic; the surgeon, who had recently relinquished being a barber; and the apothecary, still associated with the grocers.

From an etching after the picture by Holbein.

In 1511 an Act of Henry VIII had provided that no one should practise medicine within the City of London unless he had been examined, approved, and admitted by the Bishop of London and the Dean of St. Paul's. In medicine the doctors were examined by four doctors of physic; for surgery by other expert persons in that faculty. Outside London and its precincts the examinations were to be by the Bishop of the diocese, or his vicar-general, with such expert persons as he might think convenient. The Act did not apply to medical graduates of Oxford and Cambridge.

The Physician

Through the influence of Henry VIII's physician, Thomas Linacre (who desired to organize the medical profession in England and had advocated the Act of 1511), the King founded the College of Physicians in 1518 by Letters Patent, confirmed by Statute 14 Henry VIII. The original founders of the College with two other physicians were named Elects, who should yearly appoint from among themselves a President. No person except a medical graduate of Oxford or Cambridge, without dispensation, was permitted to practise physic throughout England unless he had been examined and approved by the President and three of the Elects.

"It was expedient and necessary to provide that no person be suffered to exercise and practise physic, but only those persons that be profound, sad and discreet, groundedly learned and deeply studied in physic."

From its inauguration the College of Physicians held examinations for the licentiateship. The candidates had to be university graduates, as a rule, and usually were pupils of a qualified physician. Those desiring to practise in London and the suburbs were closely scrutinized by the Censors, and when admitted as licentiates were designated as "candidates," and were eligible for the Fellowship of the College, if of good repute, after a probationary period. Licences to practise in the country were much easier to obtain.

The "congregated college," as Shakespeare terms it (*All's Well that Ends Well*, II. i. 120), began to provide medical education in this reign.

The Act of Parliament which united the Company of Barbers with the Guild of Surgeons especially empowered the masters of the united company to take yearly the bodies of four malefactors who had been condemned to death for felony for their "further and better knowledge, instruction, insight, learning, and experience in the science and faculty of surgery." Queen Elizabeth, following this precedent, granted a similar permission to the College of

Physicians in 1565 to take one, two, three, or four bodies a year for dissection. The bodies of persons executed in London, Middlesex, or any county within 16 miles might be taken by the College servants. The Fellows, under penalty of a fine, had to give in turn a public demonstration and anatomical lectures. In 1581 Lord Lumley, together with Richard Caldwell, M.D.Oxon, F.R.C.P., founded the Lumleian Surgery Lecture, whereupon the College decreed that one hundred pounds should be set aside to build the College rooms "more ample and spacious for the better celebration of this most solemn lecture." Two years later, it was ordered, on March 13, 1583–4, that a capacious theatre should be added to the College thus enlarged. The College then met in a mansion, the Stonehouse in Knight Rider Street, given to them by their first President, Thomas Linacre.

Physicians in the Wars

The College, at the Queen's request, selected from their Fellows physicians to be in attendance on admirals and generals during their campaigns. Thus Thomas Muffett, M.D. Basle et Cantab, accompanied the Earl of Essex in his expedition to Normandy; and Roger Marbeck, M.D.Oxon, provost of Oriel, the first Registrar of the College and physician to Queen Elizabeth, accompanied the Lord High Admiral, Lord Howard of Effingham, in the expedition against Cadiz in 1596. He wrote, *A briefe and true Discourse of the late honourable voyage into Spaine, &c.* (MS. in British Museum). In 1597 Dr. Henry Atkins was chosen physician to the Earl of Essex for the disastrous "Islands Voyage" to the Azores, and embarked at Plymouth with the fleet. He was so seasick, *ex jactitatione maris*, that he had to be put ashore, and Thomas Moundeford, M.D.Cantab, afterwards President of the College, was appointed in his stead. Dr. Atkins was later physician to James I, and respectfully declined the first baronet's patent on the institution of that order in 1611. He died a very wealthy man in 1635.

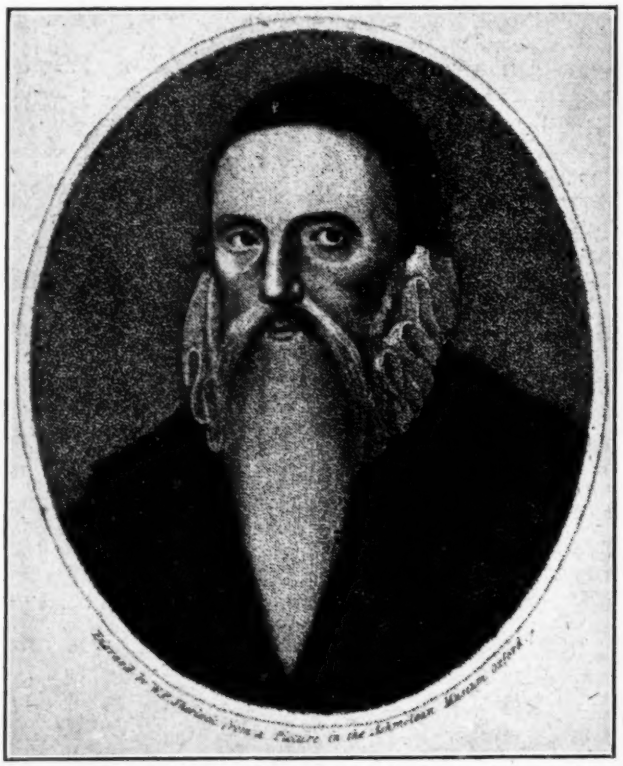
One physician seems to have been constantly employed on active service. Hippocrates d'Otthen, M.D. Montpellier et Oxon, was the son of the Emperor's physician. Queen Elizabeth sent for the elder d'Otthen, and he and Hippocrates came to England. Hippocrates was physician to the Earl of Leicester for many years, both at home and in the wars in the Low Countries; and the Queen and the State took especial note of his worth. After Leicester's death, by the Queen's command, he was physician to the Earl of Essex in the wars in France and in the Cadiz expedition. He was then ordered to go as physician to Lord Mountjoy on service in Ireland, and, finally, James I sent him as physician to the Earl of Hertford, his Majesty's ambassador unto the Archduke of Austria and Burgundy. Dr. d'Otthen died in 1611.

Another instance of Queen Elizabeth's active interest in the affairs of the College is the letter, signed J. Stanhope and Ro: Cecyll, she sent "to our very loving Friends Mr. Dr. Forster, President of the Physicians in London, and to the rest of the Electors," on August 11, 1602, asking that George Turner, M.D., F.R.C.P., should be appointed an Elect. Dr. Turner was due to be chosen for this office, but exception was taken by the College because of his backwardness in religion. The Queen desired that he might not be so disgraced, and Dr, Turner was duly appointed an Elect on August 12. He became Treasurer in 1609, but died shortly afterwards. His wife was the notorious Mrs. Turner who was hanged for poisoning Sir Thomas Overbury in the Tower at the instigation of the Countess of Essex in 1613.

Education and Practice

The physician in Tudor times was a well-educated man. Regius Professors of Physic at Oxford and Cambridge were appointed by Henry VIII in 1546. The courses at these universities were lengthy ones.

The M.D. at Oxford took fourteen years to obtain. The Statutes demanded the initial Arts course to the M.A. degree. The Arts course comprised a sound knowledge of Greek, a thorough acquaintance with Latin, and some learning in dialecties



John Dee (1527–1608). Scholar and Astrologer. Engraved by W. P. Sherlock from a picture in the Ashmolean Museum, Oxford.

and physics. Then followed a medical faculty course of seven years. The student had to dispute twice, respond once, and see two anatomies before obtaining his Bachelor's degree. A dispensation might be obtained allowing the faculty course to begin at the B.A. stage; this shortened the course to the M.B. stage by about two years, and enabled the student to get the licence to practise and the licence to give "cursory" lectures to his juniors. He then became a pupil teacher or demonstrator. The full course still demanded fourteen years from matriculation. The candidate must perform two anatomies and effect at least three cures before he was admitted to the M.D. (K. Ed. VI Statutes, 1549). Similar regulations were in force at Cambridge. Provision for clinical study both in physic and in chirurgery was woefully deficient. To obtain this the best students, like Caius and Harvey, went to Continental schools or gained experience as Army medical officers.

Medical teaching was based on the doctrines of Galen, and any departure therefrom was regarded as professional heresy.

John Geynes, M.D.Oxon, in 1559, was cited before the College for impugning the infallibility of Galen. On his acknowledgment of error, and humble recantation, signed with his own hand, he was received into the College (F.R.C.P. 1560), and afterwards became Censor and an Elect. He died of plague in 1563.

The theory of the humours, which persisted almost into the eighteenth century, governed the practice of physic.

Four humours or fluids were supposed to be part of the human constitution—blood, phlegm, choler (or yellow bile), and melancholy (or black bile). The predominant humours determined the temperament as sanguine, phlegmatic, choleric, or melancholy. In health the proportions of the four humours were

balanced; an excess or morbid condition of any of them disturbed the balance and disease resulted. The cure lay in purging or depleting the excess of humour by bleeding or cupping or diminishing the bile by means of drugs. There are many references to the humours in Shakespeare's plays. Bleeding could only be done in the appropriate month, as Dr. Owen reported when attending Princess Elizabeth in 1554.

Astrology had its eager votaries, and, although Copernicus in 1543 had made the Ptolemaic system of astronomy obsolete by his great work, *De revolutionibus orbium coelestium*, a mass of folklore and superstition clung about the heavenly bodies. Some physicians cast horoscopes of their patients and diagnosed their complaints on them. Thus Leo ruled all diseases in the ribs and sides and trembling or passion of the heart. Thomas Twine, M.D.Cantab, M.B.Oxon, who died in 1613, says Wood (*Athenae Oxon.*, i, 329) "was the friend of Dee and Allen, and was no less eminent in his time as an astrologer than a physician."

Polypharmacy was the rule in treatment, and many of the drugs and preparations were unpleasant and based on folklore. In the Letters Patent constituting the College of Physicians there was included a provision assigning to four persons named by the College the duty of "the correction and government of physic and its professors together with the examination of all medicines and the powers of punishing offenders by fine and imprisonment." This duty, confirmed by Statute in 1522, was discharged by the College for 340 years until 1858. The College visitors, empowered by Statute to destroy any defective drugs in the apothecaries' shops, were the forerunners of the inspectors and analysts under the Sale of Food and Drugs Act, 1875.

In 1585 the College decided to publish a uniform Pharmacopoeia, the drafting of which was entrusted to a committee of six Fellows. In 1589 Robert Preest, M.D.Cantab, was associated with Drs. Atslow, Browne, and Farmery in preparing the formulae of syrups, juleps, and decoctions for the Pharmacopoeia. The first *British Pharmacopoeia* did not appear until 1618, when it was produced with an introduction by Sir Theodore Mayerne by a new committee of eight Fellows, of whom William Harvey was one. Nevertheless, the reign of Elizabeth witnessed the initiation of scientific therapeutics by the College. The Sloane MSS., No. 1047, in the British Museum, and the manuscript notes in Latin (Egerton MS. 2065 Brit. Museum) "by Mr. John Hall, Physician, living at Stratford-on-Avon . . . where he was very famous," afford evidence of the complicated prescriptions of the time. Hall was Shakespeare's son-in-law.

The physician's fee was one angel (10s.) a visit. Many of them became very wealthy and bought estates as a result of their professional labours. The dividing line between physician and surgeon was not clearly drawn under the Tudors. By the Physicians' Act of 1540 (32 Hen. VIII) medicine was defined as comprehending surgery, and gave the physicians the right to practise surgery when and where they liked. As a rule, however, the physician did not practise surgery, and arranged with a chirurgeon and an apothecary to be at his service. In Ben Jonson's play, *The Magnetic Lady*, inspired by Gilbert's *De Magnete*, Dr. Rut is attended by his 'pothecary, Tim Item.

As regards obstetrics, midwifery was chiefly in the hands of midwives, untrained, often dirty, but made "handy" by experience.* Maternal mortality was high, chiefly through puerperal sepsis. Some physicians practised obstetrics, and Dr. George Owen is said to have delivered Queen Jane of Edward VI by caesarean section. In 1569 the Chamberlens, a family of Huguenot refugees, came to England. They held secret for many years the great invention of the obstetric forceps.

*Midwives were licensed by officers appointed by the Archbishop of Canterbury and the Bishop of London. The candidates' "abilities and honesty of lives and conversations" had to be testified on oath by responsible persons.

Physicians and Politics

If the Elizabethan physician mixed healing with politics he was likely to be involved in disaster. It was sometimes, though not always, his own fault. For example, his knowledge of drugs might be invoked by unscrupulous politicians in order to remove their rivals from the scene. The Earl of Leicester had an Italian physician and astrologer, named Julio, who was affirmed to be a skilful compounder of poisons, which he applied with such frequency that the Jesuit Parsons ironically extols the marvellous good luck of Queen Elizabeth's favourite in the opportune deaths of those who stood in the way of his wishes.

In Ashmole's *Antiquities of Berkshire* there is record of another of Lord Leicester's physicians, a much more honourable character than Dr. Julio. This was Walter Baily (or Bayley), M.D.Oxon, F.R.C.P., sometime Fellow of New College, Oxford, and Regius Professor of Physic in that university. Before "the moon, sweet regent of the sky, silvered the walls of Cumnor Hall" on a night of tragedy, Leicester (then Lord Robert Dudley) sent his henchmen, Anthony Forster and Varney, to Dr. Baily for a potion for his first wife, the ill-fated Amy Robsart.

"The doctor upon just cause and consideration did suspect (their design), seeing their great importunity, and the small need the lady had of physic, and therefore he peremptorily denied their request; misdoubting (as he afterwards reported) lest, if they had poisoned her under the name of his potion, he might after have been hanged for a colour of their sin."

Roderigo Lopez. Physician to St. Bartholomew's, 1567. From an engraving supplied by the Royal College of Physicians.

Baily led a life of high professional integrity. He became physician to Queen Elizabeth, and Ashmole states that Leicester endeavoured, unsuccessfully, to displace him in the Queen's favour.

Less fortunate than Dr. Baily in the web of politics was Roderigo Lopus or Lopez, F.R.C.P., the Jewish physician to Queen Elizabeth. As early as 1567 Lopez was physician to St. Bartholomew's Hospital and resident medical officer there. He had forty shillings a year, which with "his house and a certain allowance of billetts and coales" were given to him for a salary. He enjoyed a

high degree of the Queen's confidence—she granted him a monopoly for the importation of aniseed and sumach—but dabbling in politics proved his undoing. He was accused by Essex of having received a bribe from Philip II of Spain to mingle poison in the Queen's medicine. At first Elizabeth would not believe the charge, but Essex produced witnesses and letters; and Lopez, protesting his innocence of all charges except correspondence with King Philip, was sent to the Tower, tried, and hanged in 1594. Queen Elizabeth appears to have doubted the justice of the verdict, for she delayed signing the death warrant, and by a rare exercise of her prerogative she allowed Lopez's family to retain much of the doctor's property.

At least two Fellows of the College were involved in the plots that made the custody of Mary Queen of Scots a constant anxiety to Elizabeth and her ministers. James Good, M.D.Oxon, Censor and Elect, was imprisoned in 1573 for holding secret correspondence by letters with the Scottish queen. Edward Atslow, M.D.Oxon, Fellow of New College, also Censor and Elect, was a zealous Catholic. In 1570 he visited Queen Mary at Tutbury. In 1579 he was arrested on a charge of conspiring with the Earls of Arundel, Northumberland, and others, but released. In 1585 he suffered imprisonment and torture for designing means for Queen Mary's escape.

"Dr. Atslow was racked twice, almost to death, in the Tower, about the Earl of Arundell his matters, and intention to depart England." (Thomas Morgan to the Queen of Scots.)

He was set free in the same year, and died in 1594.

Physicians occasionally acted as ambassadors. Master Richard Chancellor discovered the kingdom of Moscovia or Russia in 1553, and was received by Ivan the Terrible. Three physicians were afterwards sent to Moscow in a diplomatic as well as a professional capacity. These were: Ralph Standish, M.D.Cantab, in May, 1557; Robert Jacob, M.D.Basle, in 1581; and Mark Ridley, M.D.Cantab, in 1594. Dr. Jacob was held in high esteem by Queen Elizabeth, and was sent by her to the Tsarina as being well skilled in female complaints. It was he who recommended Lady Mary Hastings to Ivan for his seventh wife, but, fortunately, the Tsar died before the negotiations were concluded. Dr. Ridley was sent as chief physician to the Tsar, Boris Godunoff, in 1594 by Lord Burghley, and was recalled by Queen Elizabeth after the death of his royal patient.

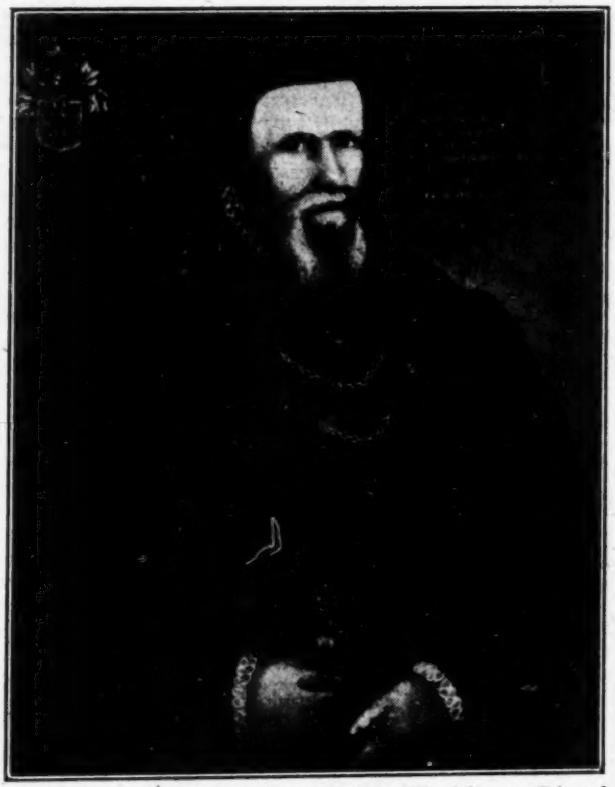
Sometimes physicians were employed as secret agents for the Government. Dr. Thomas D'Oylie, Fellow of Magdalen College, Oxford, and afterwards physician to St. Bartholomew's Hospital, in a letter to the Earl of Leicester, narrated how he was captured in the Earl of Oxford's ship by two French men-of-war in 1585 off Dunkirk.

He was stripped naked, put in the common jail, and ransomed eventually for 500 guilders. He added: "I escaped well because they found nothing in my chest but four physic and astronomic books. All letters and notes for your Honour's business I drained out of a porthole when they entered the ship."

Such were the perils to which physicians might be exposed in those days of plots and counterplots.

Contributions to Knowledge

It has already been shown that the physicians of Tudor times were erudite and learned men. Most of them had been fellows of their colleges at Oxford or Cambridge. Many emulated Linacre and John Clement, who taught Latin and Greek and wrote classical studies. John Caius, M.D.Cantab, P.R.C.P., was professor of Greek at Padua and collected MSS. of correct editions of Celsus and Galen in Italy. He was a correspondent of Gesner, who in the preface to his *Icones Animalium* styled him a man of consummate erudition, judgment, fidelity, and diligence; and in an epistle to Queen Elizabeth terms him "the most learned physician of his age." Caius supplied Gesner with information on rare animals and plants, and composed a



John Caius (1510–1573), M.D., F.R.C.P. Physician to Edward VI, Queen Mary, and Queen Elizabeth. Co-founder of Gonville and Caius College, Cambridge.

treatise on British dogs, published in 1570. At Padua, Caius was the pupil and friend of Vesalius, and was the first to introduce the study of practical anatomy into this country, and the first publicly to teach it in the hall of the Barber-Surgeons in 1546 and at Cambridge in 1557. In 1552 he published his account of the sweating sickness in English, which he afterwards improved and translated into Latin. He was physician successively to Edward VI, Mary, and Elizabeth, and co-founder of Gonville and Caius College, of which in 1559 he became master. Being a Roman Catholic he had great trouble with his Protestant fellows, who burned his mass vestments, and he resigned his mastership in 1573. He was President of the College of Physicians from 1555 to 1560 and again in 1562 and 1563, and died, as he had predicted, on July 29, 1573, aged 63.

William Gilbert (1540–1603), M.D.Cantab, Fellow of St. John's College, physician to Queen Elizabeth and President of the College of Physicians in 1600, was a great Elizabethan scientist. He founded the sciences of magnetism and electricity, and was awarded a pension by the Queen to assist his experiments. He published his great work, *De Magnete*, in 1600. He attended the Queen in her last illness. Gilbert's work marks the dawn of scientific experiment. William Harvey, "the greatest physiologist the world has seen," was already of this age, being born in 1578, and, having graduated at Cambridge, took his M.D. degree at Padua in 1602 with high commendation. But his great discovery was reserved for the reign of Charles I.

A physician was the father of English botany. This was William Turner, M.D., and Dean of Wells (d.1568), who studied plants scientifically and published his *Herbal* in 1548. Another medical botanist was William Bullein, M.D. (d.1576), who wrote the earliest of English herbals, the *Booke of Simples*. A worthy successor to William Turner was Thomas Penny, M.D., F.R.C.P. (d.1589). Gerard styles him "a second Dioscorides for his singular knowledge of plants." He supplied rare plants to Gesner, Camerarius, and Crusius. The famous herbalist, John Gerard (1545–

1612), was curator of the botanic garden which the College of Physicians made in 1587. He was a barber-surgeon and master of the Company in 1607.

Ophthalmology had its beginnings as a specialty under Queen Elizabeth. In 1561 the College of Physicians granted a faculty to John Luke to treat diseases of the eye, but he was strictly limited to the use of external means. Dr. Baily's tract, *A briefe Treatise concerning the Preservation of the Eyesight,* was first published in 1586 and went through seven editions. Richard Banister, "Mr. in Chyrurgery, Oculist and Practitioner in Physic," whom A. Sorsby terms "the first authentic voice in British ophthalmology," qualified in 1602, but did not publish his *Breviary of the Eyes* until 1622.

Two Fellows of the College had been headmasters of two great public schools.

Christopher Johnson, M.D.Oxon, Wykehamist and Fellow of New College, was "a most excellent Latin poet, philosopher, and physician." In 1560 he became headmaster of Winchester, spending his leisure in his beloved study of physic, "but not to the neglect of his school." He resigned his headmastership to practise in London. He was an Elect and Treasurer of the College and died in 1597. Reuben Sherewood, M.D.Cantab, Etonian and Fellow of King's College, was headmaster of Eton in 1571. He later practised successfully at Bath, and died there in 1598.

The list of physicians eminent in different spheres of knowledge in Elizabeth's reign may close with the name of Thomas Campion, M.D. (1567–1619), poet, musician, and physician, whose first collection of English poems, *A Book of Airs,* appeared in 1601.

The Surgeon

In 1540 Henry VIII united the barbers and the surgeons in the Barber-Surgeons' Company (32 Hen. VIII, c. 42). The promoter of this union was Thomas Vicary, serjeant-surgeon to King Henry VIII, King Edward VI, Queen Mary, and Queen Elizabeth I. He died in 1562. The union elevated surgery to the dignity of a profession, gave it corporate and municipal privileges, set a high standard of education and qualification, and promoted the teaching of anatomy and surgery. Operative surgery became more dexterous and resourceful.

Surgeons were not allowed to administer "inward remedies" except by special permission of the College of Physicians, a restriction successfully maintained by Caius before the Lord Mayor and the Queen's Commissioners. In 1593–4, for instance, the eminent surgeon, John Banister (1540–1610), in obedience to Queen Elizabeth's request, received a limited licence to practise medicine from the College.

The most famous surgeons of the Queen's reign were Thomas Vicary; Richard Ferris or Ferrers, also serjeant-surgeon to the Queen; Thomas Gale (1507–87), author of *Certaine Workes of Chirurgerie,* in which he advocated conservative surgery; and William Clowes (1544–1604), surgeon to the Queen and to St. Bartholomew's Hospital. He served first as an army surgeon in the Earl of Warwick's army at Le Havre in 1563, then in the Low Countries with Leicester in 1585, and later as a naval surgeon in the victory over the Armada. He first wrote *De Morbo Gallico* (1579), the text of which is in English. He also wrote on affections of the skin, affirming the efficacy of the royal touch for cases not responding to ordinary treatment. He recorded many interesting cases in his *Prooved Practice for all young Chirurgians.* George Baker (1540–1610) was another royal surgeon of repute and a scholarly man. In 1577 he came to fisticuffs in the fields with William Clowes, and both surgeons were admonished by the Barber-Surgeons' Company. One should also mention *The Surgeon's Mate* (published 1617), a manual of practical surgery, written by John Woodall, medical officer in the army of "brave Lord Willoughby" in the Low Countries in 1591. These men advanced surgery and imparted their knowledge to students.

The Apothecary

The apothecaries belonged to the Grocers' Company and received their technical training as apprentices; they were compounders and dispensers of medicines. They also assisted the physicians in applying certain forms of treatment under their direction. William Bullein in *The Booke of Compoundes and the Apothecaries Rules* is careful to remind the apothecary "that he doe remember his office is onely to be the Physician's Cooke." Unlike the half-starved character in *Romeo and Juliet,* the apothecaries were, as a rule, a prosperous and reputable set of men, already prepared to organize themselves into a professional corporation, and they received an independent Charter from James I in 1616. As already mentioned, the College of Physicians was empowered to overhaul the apothecaries' stores for "evil and fawty stuffe."

Public Health

Preventive medicine was in its infancy, although Sir Thomas More, saint and martyr, Sir John Elyot, and Andrew Boorde in the reign of Henry VIII had grasped its fundamental principles and those of hygiene, nutrition, and education, and had set forth their application in their writings. These men were far ahead of their time. More was an enlightened public health reformer, as his *Utopia* reveals. When Commissioner of Sewers, he improved water supplies, and his plague edicts were embodied in the plague orders of 1543, which were adopted in the Elizabethan regulations. The Corporation of London made many regulations about infectious diseases, scavenging, and sanitation.

William Gilbert (1540–1603). Physician to Queen Elizabeth in an honorary capacity. From an engraving supplied by the Royal College of Physicians.

We can therefore note the beginnings of public health administration on an organized and permanent basis in Tudor times.

Quacks and Empirics

In spite of the College of Physicians and the Barber-Surgeons' Company, quacks and empirics in this age, as always, flourished and had influential clients. Sir Francis Walsingham tried on three occasions to stop the College from restraining quackery. The first case concerned Margaret Kenwix, a herbalist, patronized by Queen Elizabeth. Walsingham threatened the College with penalties if they did not comply with the request to leave her alone. The College courageously replied that it was "willing and content to abide any inconvenience whatever might ensue" rather than stop Mistress Kenwix from practice. The other two cases concerned a charlatan named Not, who medically attended Walsingham, and another named Buck. The College proved inflexible and remonstrated, whereupon Walsingham promised that he would in future cease to act in any way contrary to the benefit and dignity of the College.

Diagnosis by "water-casting" (inspection of a patient's urine) by physicians and wise women had long been practised, but was now opposed by the College of Physicians.

Queen Elizabeth, though like her father an amateur of medicine, and fond of presiding at the disputations in the Physic Act at her visits to Oxford and Cambridge,* and though she had illustrious physicians and surgeons at her command, sometimes, as in the case of Margaret Kenwix, encouraged empirics. In particular, she had great belief in that enigmatic mathematician and astrologer, John Dee (1527–1608). This "Dr. Dee" (he had, possibly, an LL.D.) was a graduate of St. John's College, Cambridge, one of the original Fellows of Trinity College, Cambridge, a student and traveller abroad—he even visited St. Helena—extremely learned and offered high ecclesiastical preferment which he declined, an alchemist and searcher for the philosopher's stone and the elixir of life, and a professor of occult mysteries. The Queen deigned to become his pupil in 1564, frequently consulted him on her health, on the comet of 1577, and on other subjects; she visited him twice at his house at Mortlake to see his library. In 1571, when Dee was seriously ill, she sent two of her physicians, Dr. Atslow and Mr. Balthorp, to see him, and also Lord Sidney with "divers rarities to eat." In October, 1578, by the Queen's command, "Dr. Dee conferred with Dr. Bayley concerning her majesty's grievous pangs and pains caused by toothache and the rheum." Dr. Dee was of course a very exceptional empiric, and no doubt Dr. Baily felt ethically justified in meeting him. Dee was Warden of Manchester College from 1595 to 1604.

Diseases

There was much disease in England in Queen Elizabeth's days. The plays of Shakespeare and Ben Jonson, especially the former, contain many allusions to the prevalent maladies. For example, Thersites in *Troilus and Cressida* (v. i. 19–28) mentions fifteen diseases under popular names:

"Now, the rotten diseases of the south (syphilis), the guts-griping (colic), ruptures (hernias) catarrhs, loads o' gravel i' the back (stone in the kidneys), lethargies (apoplectic strokes), cold palsies (paralysis of the limbs), raw eyes (chronic inflammation of the eyelids), dirt-rotten livers (hepatic affections or so ascribed), wheezing lungs (asthma), bladders full of imposthume (chronic cystitis), sciaticas, lime-kilns i' the palm (psoriasis of the palm), incurable bone-ache, and the rivelled fee-simple of the tetter (some skin disease), take and take again such preposterous discoveries!"

*On one occasion the Queen presided at a disputation, while her physician, Dr. Walter Baily, opposed the questions whether slowly digested foods were preferable to those easily digested and whether life could be prolonged by medical art. The dissertations lasted for five hours, and the Queen "gave very attent care unto them and tarried to the full end thereof." On this Dr. Herbert R. Spencer commented: "We cannot be surprised therefore that the Queen refused to take medicine when she was on her deathbed."

This field has been thoroughly studied by StClair Thomson, Alban H. Doran, H. R. Spencer, I. I. Edgar, Goldwin Smith, and others. Only a brief outline of Elizabethan diseases can be given here.

"Surfeits" due to immoderate eating and drinking often occurred. Gout and stone prevailed among the well-to-do. Scurvy was prevalent, owing to the lack of green vegetables, until William Butler (1535–1618), a Cambridge physician,

William Clowes (1544–1604). Surgeon to Queen Elizabeth and James I. Traditional portrait in the Wellcome Historical Medical Museum.

put scurvy grass and other herbs into the beer. Scabies was so common that it was called "the English Itch." Syphilis was a deadly scourge, as Dr. Johnston Abraham has shown. Leprosy (the term also included several skin diseases) was nearly abolished, but still lingered. There was much indigenous malaria, especially in the Fen districts.

Measles was often confounded with smallpox. These two diseases together with pulmonary tuberculosis took a heavy toll. Edward VI's racking cough and active tuberculosis were lit up by the attack of measles and smallpox from which he suffered in April, 1552. Queen Elizabeth had a dangerous attack of smallpox in October, 1562, and "she was all but gone" (De Quadra to Duchess of Parma). In her convalescence she was concerned with the pock marks on her face to avoid disfigurement. She had another severe attack in October, 1572, though this may have been chicken-pox. As Princess Elizabeth in 1553, she had probably suffered from scarlet fever followed by acute nephritis, for she had puffiness of the face and dropsy.

Other dangerous maladies assailed Her Majesty's subjects. There was an epidemic of influenza in 1557–8 (Creighton). The sweating sickness, which Creighton and Dr. Michael Foster identified with the "Picardy sweat," had gone as suddenly as it came. The fifth and last epidemic, so well described by Caius, was in 1551. Plague had remained endemic in England since 1349, the terrible year of the Black Death, which destroyed two million people, half the existing population. The City of London was rarely free

from it, and there were serious outbreaks in 1582 and 1603. The Privy Council, when ordering precautions against the spread of the disease, considered that London should have a special plague hospital.

There were hardly any hospitals since Henry VIII had abolished the monastic hospitals against the advice of Sir Thomas More. The only metropolitan hospitals which survived, through the wisdom and persistence of the citizens of London, were the five Royal Hospitals—St. Bartholomew's, St. Thomas's, Christ's Hospital (founded in the buildings of the Grey Friars), Bethlehem Hospital for the insane, and Bridewell, a prison hospital.

Rheumatic complaints, attributed to the fogs and damp of England, were prevalent. Some cases were examples of rheumatic fever, but the majority can be ascribed to chronic rheumatism. Mary Queen of Scots suffered much from the chronic arthritic form during her captivity in England, and was permitted to take the baths at Buxton, which belonged to her gaoler, the Earl of Shrewsbury. One Dr. Jones was the resident physician, who made it his business to enhance the fame of the watering-place. Spa treatment also began at Harrogate under the auspices of Timothy Bright, M.D.Cantab, who wrote an erudite treatise on "Melancholia," a book on hygiene, and invented modern shorthand.

The Elizabethan adventurers voyaging to the New World encountered new diseases, such as "calenture" (heat-stroke), "las espinas" (prickly heat), "camaras de sangre" (tropical dysentery, from which Drake died in 1595), and "tabardillo" (yellow fever). These were studied by English ship surgeons, and first described by "G. W." (? George Wateson or Whetstone) in 1598 in the first English treatise on tropical medicine, entitled *The Cures of the Diseased in remote Regions: Preventing Mortalitie incident in Forraine Attempts of the English Nation.*

Conclusion

Of the reign of Queen Elizabeth I it may be said that, amid much confusion and error, medicine and surgery had become organized professions, and that learned physicians and surgeons were advancing the study of disease. Public health administration began to be organized under the stimulus of pestilence.

Caius and Gilbert lived in the dawn of experiment which preceded the great discovery of Harvey in the "insurgent century," as Professor Charles Singer terms the seventeenth century, so rich in scientific foundations.

This progress owed much to King Henry VIII and his illustrious daughter, Queen Elizabeth I. From that time medicine has enjoyed the patronage and encouragement of successive sovereigns of Great Britain, and to-day Queen Elizabeth II maintains this high tradition of her predecessors in an age when so great a harvest is reaped in scientific knowledge, medical research, and the prevention and cure of disease.

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MEDICINE AND THE CROWN

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In this Coronation Issue of the *British Medical Journal* it is fitting that there should be more than passing reference to the relations between the Crown and the profession of Medicine, since in the long roll of our sovereigns there are many who demonstrated clearly their interest in its advancement. Physicians, surgeons, general practitioners, public health, hospitals, and nursing have all at some period profited by the active interest and encouragement of a sovereign. Only three weeks ago our young Queen demonstrated her deep interest in our profession by graciously laying the memorial stone of the new buildings of the Royal College of Surgeons—of which she was already an Honorary Fellow. As medicine has become more corporate these links have become more evident. Nearly four and a half centuries have passed since the real beginnings of corporate medicine in this country; but for five hundred years before that there had been in the practice of the Royal Touch a more personal relationship between the sovereign and the Healing Art.

The Foundation of Hospitals

From Saxon times throughout the Middle Ages various sovereigns were active in founding hospitals, homes for the destitute, and lazar-houses. In the tenth century Athelstan assisted the saintly work of the canons of the Minster at York by founding St. Peter's Hospital in that city. The Leper-hospital of St. Giles in Holborn was founded by Queen Maud, consort of Henry I, some time before 1118. The Leper-hospital of St. Bartholomew in Oxford was founded by Henry I in 1126, and by the year 1135 he had founded four other institutions in Colchester, Cirencester, Lincoln, and Newcastle-upon-Tyne. The Leper-house of St. Margaret at Huntingdon was founded in 1165 by King Malcolm IV of Scotland, who was also Earl of Huntingdon; it was annexed to a Cambridge college in 1462. Stephen refounded the Hospital of St. Leonard at York in 1135, and his wife, Matilda, founded St. Katharine's in London. John was regarded as an outstanding patron of lepers, and he is supposed to have founded hospitals near Bristol, Lancaster, and Newbury. During the

whole of the twelfth century and in the thirteenth the sovereigns of England continued to take an active interest in this saintly work, though the need for leper-hospitals as such gradually diminished. By the time of Edward III the leper-hospitals at Oxford and elsewhere contained no lepers, and in 1434 new statutes had to be made for the great leper-hospital at Durham, since in that area there were then practically no lepers left. One of the last of these houses of succour to be erected was the Hospital of St. John the Baptist in Cheapside, which was founded by Henry VII in 1505.

The dissolution of the monasteries by Henry VIII led to great social changes in the community, and incidentally, by abolishing such a large number of hospitals and almshouses, resulted in a great increase in the numbers of beggars and vagrants in the streets. But in another direction his act led to the rise of the major London hospitals.

The earliest of the great London hospitals is St. Bartholomew's, which from the time of its foundation in 1123 was used for the treatment of the sick. It is not usually realized that the hospital originally came into being through the generosity of Henry I. The legend goes that Rahere, an Augustinian monk who had travelled from England to Rome, had a vision there in which St. Bartholomew the Apostle instructed him to found at Smithfield a tabernacle of the Lamb, a temple of the Holy Ghost. On his return he found that the chosen site belonged to the King, but Rahere was successful in his supplication. He built his priory and its attached hospital. The hospital "was designed to give help to the needy, orphans, outcasts, and poor of the district, as well as to afford relief to every kind of sick person and homeless wanderer. The sick poor were to be tended until they recovered, women with child until they were delivered, and if the mother died in hospital the child was to be maintained until the age of seven years" (Sir D'Arcy Power). There can be no doubt that St. Bartholomew's was concerned with the treatment of the sick from the start. It is known that in 1223 and in the following year Henry III made a gift to the hospital of an oak tree from Windsor Forest for the heating of the hospital. On the dissolution of the monasteries Henry VIII took the revenues of St. Bartholomew's Priory into his own hands, and the citizens petitioned for the continuance of the hospital. Henry then granted three charters—of 1544, 1546, and 1547—to the hospital. These refounded it for its original purpose, and it is under these charters, especially that of 1546, that the hospital is now administered.

Edward VI and the Royal Hospitals

There is an incident in the history of the London hospitals which is somewhat obscure and misunderstood. I have already mentioned the change in social life produced by the dissolution of the monasteries, which had always had as part of their function the succouring of the needy, the crippled, and the sick. We have seen how Henry VIII had been persuaded to restore St. Bartholomew's Hospital to its original purpose, and the citizens of London had acquired St. Mary's of Bethlehem for the care of the insane. In the early days of the reign of Edward VI the streets of London were swarming with poor and destitute, with rogues and with loose women. Richard Grafton, who had printed the Book of Common Prayer in 1549 and in 1552, was much concerned, and he interested Ridley, the Bishop of London, in the matter. In February or March, 1552, Ridley preached before the King at Whitehall. This famous sermon dealt with the necessity of caring for the poor. As soon as it was finished Edward sent of his own accord for Ridley and asked what steps he should take. The Bishop was astonished at the King's knowledge of the problem, and he suggested that his sovereign should address a letter to the Lord Mayor asking him to advise appropriate action. Edward had the letter written at once; he signed it, and asked Ridley to deliver it by his own hand to the Lord Mayor, Sir Richard Dobbs.

As a result of this action a part of the difficulties were overcome. At that time the area later occupied by Christ's Hospital was covered with the semi-ruined buildings of a dissolved convent of the Grey Friars into which "rogues and disorderly women" crept at night to sleep. The City now proposed to take over the buildings for the reception of fatherless and pauper children, and also St. Thomas's Hospital for the treatment of the sick and infirm. This ancient hospital had been surrendered to Henry VIII in 1540, and during most of the reign of Edward VI it was owned by Sir John Gate, and was almost derelict. There is a legend that Henry had intended to re-establish it as a hospital, as he had done in the case of St. Bartholomew's, but death had prevented him. This proposed action of the City fathers would deal in part with the social problem of the City, but there now remained the most difficult problem of the reformation and employment of tramps, rogues, and dissolute women. They therefore proposed to supplicate the King for the royal palace of Bridewell. A deputation waited on Edward in May or June, 1552, and, after it had presented its report, Bishop Ridley, on his bended knees, presented a personal supplication for Bridewell. Edward presumably gave his permission for the citizens to continue with their scheme for Christ's and St. Thomas's—already owned by them—since in November, 1552, Christ's Hospital received 380 children, and at the same time 200 sick and aged persons were admitted to St. Thomas's. But Bridewell was not the personal property of the King: it belonged also to his successors, and he must consult his Council.

In January, 1553, Edward began to show the early signs of pulmonary tuberculosis. On April 10 the Lord Mayor was summoned to the Court at Whitehall, and there, in the words of Stow, "the King's majesty gave to him, to the

Symbolical representation of the grant of the Charter of the Three Royal Hospitals—St. Thomas's, Christ's, and Bridewell—by Edward VI to the Corporation of London, June 26, 1553. Line-engraving by George Vertue after the picture at Bridewell.

commonality and citizens, for to be a work-house for the poor and idle persons of the city of London, his place of Bridewell." On the following day the King went to Greenwich, from which he never returned to London. The action which the King had personally inaugurated was now completed by his Council's officers. On June 12 he executed an indenture with the City of London, whereby he consented to be named the founder and patron of the three new hospitals, and the appointment of governors and other officials for the three hospitals was authorized. On June 26 the Charter of Edward VI of the Hospitals of Christ, Bridewell, and St. Thomas the Apostle was granted. It is signed by "Cotton," who was controller of the royal household. The King's condition had been desperate since May 5, and on July 6—ten days after the granting of the Charter—he passed away.

A translation of the Charter can be read in Parsons's *History of St. Thomas's Hospital*. From the wording it is quite clear that Edward intended the provisions to apply jointly to these three hospitals, hereafter to be called the "Royal Hospitals"; that the governors should be one body corporate and politic; and that the governors and their successors should have a common seal.

The interesting point is that there is in Bridewell a picture which is supposed to represent the granting of this charter by Edward VI. The picture was formerly attributed to Holbein the Younger, until it was later realized that he died ten years before the event depicted. The most probable attribution is to the court painter William Scrottes, who was born in the Low Countries. It is certainly a contemporary work, but it is a curious fact that there is no record of it whatever until 1751, when the governors thanked Mr. George Vertue for his engraving of the picture. Vertue's engraving is reproduced here. As a work of art it has great merit; but he has taken artistic licence in turning the sickly King into a rather pompous youngster, and in making the other characters appear older. This picture is still at Bridewell, and has always been associated with that institution. Mr. E. G. O'Donoghue, the learned author of the history of Bridewell, attempted to show in 1923 that the picture represented not the granting of the Charter but the occasion on April 10, 1553, "at which Edward VI announced his intention, probably reading from a document drawn up by the Council, of bestowing his palace as a personal gift upon the Corporation of London." O'Donoghue rightly argues that on June 26—the date when the Charter was granted—Edward was not at Whitehall, the audience chamber of which is represented in the picture, but at Greenwich; and that, in any case, by June 26 the King was on his deathbed. In this way O'Donoghue hoped to associate the picture and the incident even more closely with Bridewell. But he overlooked the obvious fact that, in both the picture and in Vertue's engraving, the King is not reading from a document; he is presenting to the Lord Mayor a document which, judging from the presence of the enormous attached seal, can only be a charter.

The painting represents in effect what *would have happened* on June 26, 1553, if the King had been in good health. It is an idealized picture, symbolizing the granting of the Charter to the Three Royal Hospitals. There is no mention of this picture in Parsons's *History*, and its association with St. Thomas's and Christ's, equally with Bridewell, appears to have been overlooked.

In the year 1555 the Hospital of St. Mary of Bethlehem became a Royal Hospital. Two years later St. Bartholomew's was added, so that the final number was five.

The establishment of the great provincial and London hospitals in the eighteenth century was due to the wave of philanthropy which spread over the country at that time, and royal patronage played only an indirect part in their foundation.

The Sovereign's Personal Interest in Medicine

During the Renaissance a smattering at least of medical knowledge was part of the educational equipment of a gentleman. Henry VIII is an excellent example of the case in point. Apart from his practical interest in physicians and surgeons, which is more fully mentioned later, he dabbled in pharmacy and treated the illnesses of his friends. There is in the British Museum a manuscript known as the Diary of Dr. Butts. It is in effect a pharmacopoeia of plasters, liniments, and cataplasms drawn up by Butts and three other famous physicians of the time. Many of these medicaments were devised for the treatment of Henry's ulcers. Included among them is a prescription entitled "The King's Majesty's own Plaster," which was described as a plaster devised by the King to heal ulcers. It consisted of pearls and guaiacum wood. Other formulae are described as having been "devised by the King at Greenwich and made at Westminster"; they are for the treatment of excoriations and swelling of the ankles, and also to prevent inflammations and to remove itching.

It was stated by a famous Wittenberg professor of medicine that Elizabeth I also dabbled in prescribing. She was supposed to have sent a formula of her own devising for a "cephalico-cardiac medicine" to Rudolf II, the Holy Roman Emperor. She is also credited with having selected doctors and pharmacists for Ivan the Terrible of Russia.

The Anatomy of Geminus

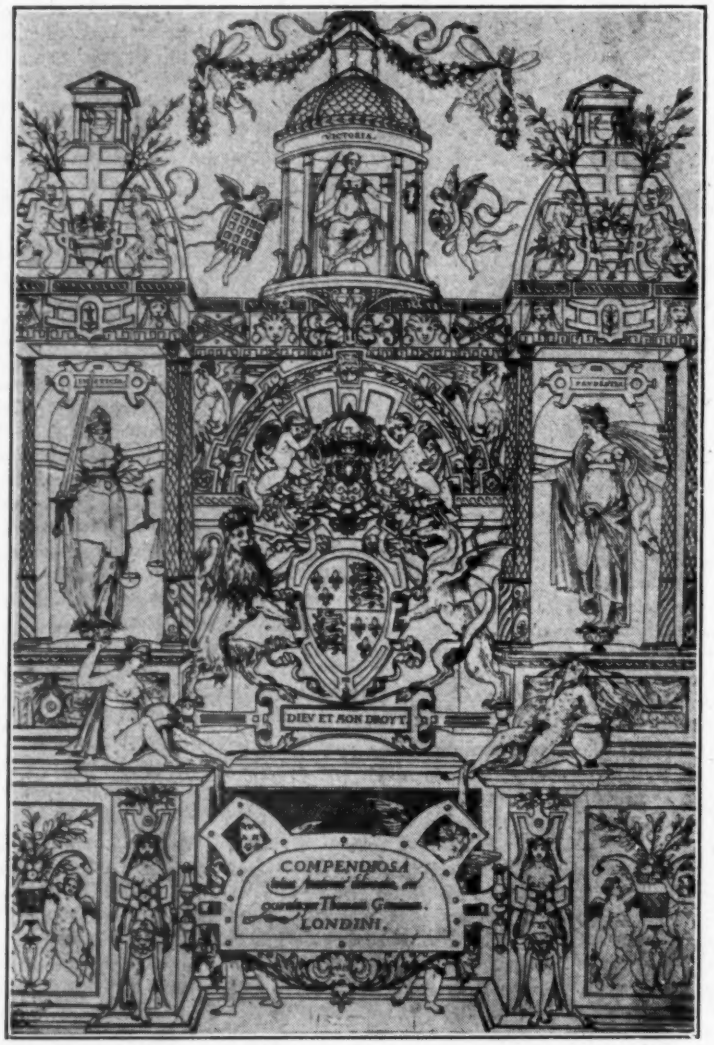
More important from the aspect of the scientific advancement of medicine was the interest which both these sovereigns took in anatomy. The *Fabrica* and the *Epitome* of Vesalius were published at Basle in 1543. Two years later there appeared in London a folio work entitled *Compendiosa totius Anatomie delineatio, aere exarata per Thomam Geminum*. Who was this man Geminus? He was certainly a foreigner, and he probably belonged to the village of Lys-les-Lannoy, which lies about fifteen miles from Lille, in French Flanders. He probably came to England in 1540, and died there in 1563. Despite doubts which have been cast on his profession, Geminus was almost certainly a surgeon, and he was probably also a maker of surgical instruments. He was attached to the Court, and he received £10 per annum from the Privy Purse. In addition to these pursuits Geminus was also a skilled engraver; in fact, he was the first-known line-engraver to work in England. He made certain plates for the famous women's book entitled the *Byrth of Mankynde*, and he followed this with his Anatomy of 1545.

The most important part of this work on anatomy consists, apart from the engraved title-page, of forty engraved plates which are direct copies of the woodcuts which appeared in the *Fabrica* and the *Epitome*. There is also a short accompanying Latin text, descriptive of the plates, which is very much shorter than the *Fabrica* text and is not a résumé of it. Vesalius was quick to point out that his great work was being plagiarized; and he accused "that Englishman" of having copied his illustrations poorly and without skill. Vesalius had no cause to become heated over the quality of the Geminus copies; they are very competent engravings, and the fact that they were reprinted four times shows that they met a need. In the long dedication Geminus refers to Henry VIII in flattering terms, and the ornate title-page bears the royal arms. There is no doubt that this work was published with Henry's knowledge and approval.

Seven years after its first appearance the Anatomy of Geminus had a second edition (1552). In 1553 the third edition appeared, and this was a translation into English. There was a fourth edition (second English) in 1557. All these editions bore the royal arms on the engraved title-page, and the book was therefore sponsored also by Edward VI and Mary. The last—fifth—edition, also in English, appeared in 1559, the year after Elizabeth came to the throne. The engraved title-page again appears in this edition, but the royal arms have now been replaced by an engraved portrait of Elizabeth, which, though not particularly pleasing, ranks as one of the few portraits of that monarch during the early years of her reign.

The Crown and the Physicians

At the dawn of the sixteenth century neither the physicians nor the surgeons in England were looked upon with the respect which they claimed on the Continent. Many quacks practised both medicine and surgery, and conditions were such that effective control was difficult. The most important influence in effecting an amelioration of the position was Thomas Linacre, who was one of the earliest English humanists, and who had spent a lengthy period in Italy before he was summoned from Oxford to undertake the education of Prince Arthur. On the death of the prince Linacre left the Court to practise his profession, but he had by then many friends in the royal household, and he was well known to Prince Henry. On Henry's accession in 1509, Linacre was appointed as his physician, and the ideas which Linacre had long held regarding the regulation of medical practice had a chance of being tried out under the King. In 1512 an Act was passed which provided that no one should practise the profession of medicine within the City of London or within a radius of seven miles unless he had passed an examination conducted by the Bishop of London or the Dean of St. Paul's. The actual examination was carried out by experts in medicine and surgery, and similar arrangements were made for the provinces. Graduates in medicine of Oxford and Cambridge were exempted from this examination.



Engraved title-page of T. Geminus, *Compendiosa totius Anatomie delineatio*. First edition, London, 1545. The design bears the Royal Arms of Henry VIII. (From the copy in the Wellcome Collection.)

This measure did not produce the degree of success which Linacre wished, and he now proceeded with a scheme for the establishment of a College of Physicians. On September 23, 1518, the College was constituted by Letters Patent. There was some ambiguity in the wording, and the constitution of the College was therefore confirmed by a statute. The founders were Linacre, John Chambre, and Ferdinand de Victoria, physicians to the King, together with Nicholas Halsewell, John Francis, and Robert Yarley. By the statute these six men, together with two other named physicians, were appointed Elects and were enjoined to appoint a president yearly from among themselves. Linacre was elected the first president of the new college, and he continued to be appointed annually to that office until his death in 1524. Without the active interest of Henry VIII and of Wolsey, Linacre's plans would not have matured. It should be added that Henry also furthered the cause of medicine by his foundation of the Regius Chair of Physic at Oxford and at Cambridge.

The Crown and the Surgeons

It is by no means a coincidence that both the physicians and the surgeons should have become separately incorporated in a fruitful manner in the reign of the same sovereign, Henry VIII. In each case the interest of the King made smooth the path. In the case of the surgeons he had a personal interest, since he was from time to time much troubled by a varicose ulcer in the leg. In each case, also, a powerful personality was at work—in the case of the physicians, Linacre, and in the case of the surgeons, Thomas Vicary.

During the fourteenth century the craft of surgery was in a chaotic state in London. To parody a famous sentence of Macaulay's, it may be said that there were barbers and there were surgeons; but while some barbers were surgeons, the surgeons were not barbers. A Fraternity or Guild of Surgeons—a weak and ineffective body—had existed in London from at least 1369, with some power to control the professional activities of its members. The Guild of Barbers was probably an older body, since its records go back to 1308. Some of its members were barbers who shaved, drew teeth, and let blood; while other members did minor surgery and the work which we would now largely associate with the general practitioner. As time passed the Guild of Barbers flourished and was eventually elevated to the dignity of a City Company, the members of which had the right to wear a livery and to govern the professional conduct of its members.

In 1493 the Surgeons and the Barbers entered into a loose alliance, but the position was unsatisfactory, since there was little possibility of controlling the numerous quacks, cutters for the stone and the cataract, and performers of similar dangerous operations—which, in any case, were usually left to them by both the surgeons and the barbers.

This unsatisfactory state of affairs was well known to Thomas Vicary, a young surgeon of great ability. During one of Henry VIII's progresses he was laid up at Canterbury owing to his varicose ulcer. Vicary was called in, and—temporarily—cured the condition. Henry rewarded him in 1528 by appointing him his surgeon. Two years later he was given the reversion to the post of sergeant-surgeon, and in 1536 he succeeded to the post. Vicary used well the opportunities which he had of influencing the sovereign, and in 1540 the two Companies of Surgeons and Barbers were formally united into a new company called

the Masters or Governors of the Mystery and Commonality of the Barbers and Surgeons of London—or, in short, the Barber-Surgeons' Company. Vicary was not a master of either company at that time, but his great influence is shown by the fact that Holbein, in his famous picture, showed him receiving the charter of incorporation from the King.

This union persisted for just over 200 years. In 1745 the two companies separated, and the Surgeons' Company ultimately became the Royal College of Surgeons of England.

The Crown and the Apothecaries

A similar state of affairs existed in respect of the apothecaries; but the royal interest which brought about a consolidation of their affairs was not that of Henry but of James I. The Grocers of London has arisen out of a Guild of Pepperers which was known to exist in the late twelfth century. The Grocers were incorporated by Edward III in 1345, and they received a Royal Charter from Henry VI in 1429. Twenty-six years later they were entrusted with the task of examining the drugs and other materia medica sold by the apothecaries. As a result the apothecaries eventually became members of the Grocers' Company, probably with considerable financial advantage, since the Grocers were wealthy and ranked second among the City companies. The alliance between the two parties was uneasy. By 1562 the College of Physicians was attempting to obtain control of the apothecaries and to have them taken away from the jurisdiction of the grocers. The reason was that the apothecaries not only sold materia medica, they also gave medical advice and applied the drugs which they advised. This practice later became a bone of contention between the physicians and the apothecaries. But if the physicians had a grievance because the apothecaries not only compounded drugs but saw patients, the apothecaries themselves soon thought that they were aggrieved because some physicians not only saw patients but also compounded drugs. In 1588 the apothecaries petitioned Queen Elizabeth for a monopoly in compounding and selling drugs; the petition was refused. Moreover, the grocers felt that the apothecaries were having the best of two worlds, since they not only sold drugs but also groceries.

Engraved title-page of T. Geminus, *Compendiosa totius Anatomie delineatio*. Fifth edition, London, 1559. The plate used is that of the 1545 edition, with the substitution of a portrait—probably the earliest published—of Elizabeth I in place of the Royal Arms. (From the copy in the Wellcome Collection.)

When Elizabeth died and James acceded in 1603 all charters and monopolies had to be surrendered for inspection, as was always done on the death of the sovereign. Most charters were restored. But on this occasion the charter of the Grocers' Company was restored in 1607 with the alteration that the apothecaries were to form a separate section of the company. Much encouraged, the apothecaries reminded themselves that they had no voice in the government of the company, and under the stimulus of Gideon Delaune, the apothecary to James's consort, Anne of Denmark, they determined to agitate for complete separation from the grocers. Delaune was anxious to have a Bill promoted in Parliament for this purpose; but the grocers naturally showed great hostility, and he seems to have been the only apothecary who stood his ground. It was several years before the apothecaries were whipped up to the next step, which was taken in 1614. On April 2 of that year the Apothecaries of London presented to James a Humble Petition in which they asked to be incorporated by Royal Charter, just as had happened in the case of the Physicians and Barber-Surgeons.

James acted at once and instructed Sir Francis Bacon and Sir Henry Yelverton, the Law Officers of the Crown, to confer with Mayerne and Atkins and to report. It was known that Bacon did not think highly of physicians in general, and from now on he showed himself a friend active in the interests of the apothecaries. He and his brother Law Officer recommended the separation of the apothecaries from the grocers, and suggested that the apothecaries might be more fittingly associated with the physicians. The King replied to his Law Officers at once, and suggested that the new company should retain the precedence which it had formerly held as a part of the important Grocers' Company. Both the physicians and the grocers petitioned against the new proposal; and the position of the apothecaries was not strengthened by the fact that they were as a body not unanimous in the desire to secede from the grocers. A charter was drafted which would have made the new company subservient to the physicians. There is no doubt that Sir Francis Bacon continued to work for the apothecaries, and it was owing largely to him that this draft charter was amended so as to permit the apothecaries to manage their own affairs. The amended charter was signed on December 6, 1617. While the apothecaries had triumphed, the disputes did not end, and it was well over 200 years before the position of the apothecaries in relation to the physicians and surgeons was settled.

The Crown and the Royal Society

The history of the foundation of the Royal Society is relatively well known, and can be dealt with briefly here. By the year 1645 there were meeting in London a group of men who were interested in experimental philosophy and such matters. The meetings were informal discussions and

Holbein's Commemoration of the Act of Union between the Barbers' and Surgeons' Companies in 1540. Stipple by W. P. Sherlock after the picture at Barbers' Hall.

took place at the houses of Robert Boyle and of other members. The subjects of discussion covered a wide field, and included what we would now term the medical sciences. "About the year 1648–9," John Wallis, the recorder of these events, informs us, the company divided and some members went to Oxford while others remained in London. The Oxford Society became the Philosophical Society of Oxford, and continued to hold meetings until 1690, when that society became defunct. The London Society continued its meetings, usually at Gresham College, until about the year 1658, when the grave political disturbances towards the end of the Commonwealth made it expedient to discontinue them. However, with the Restoration matters improved vastly, and the meetings at Gresham College were resumed. It was recognized that the Society should be organized on more formal lines, and a memorandum was drawn up to promote the line of action.

Charles II now comes into the picture. He had wide interests, and at a later date he was said to have had a "chymist" laboratory and an operator in his palace; it was also said that he frequently visited the laboratories of his friends and discussed scientific matters. Early in December, 1660, the journal-book of the new Society records that Sir Robert Moray had brought word from the Court that the King had been acquainted with the design of the members, and "he did well approve of it, and would be ready to give encouragement to it." The Society then proceeded to limit its membership to fifty-five, and to draw up certain rules regarding elections, officers, and servants. Sir Robert Moray was elected president for a month, and was thereafter re-elected. He had been with Charles during his exile, and exerted much influence in Court circles.

An important member of the infant Society was the diarist John Evelyn, who also had considerable influence at Court. He had obviously given thought—probably at times subconsciously—to the question of a suitable name for the Society. In November, 1661, he published his translation of a work by Gabriel Naudé, and in his dedication to the Earl of Clarendon he praised that nobleman for his services "in the promoting and encouraging of the Royal Society." Evelyn had had frequent conversations with the King, and the name of the Society which he proposed may have been suggested by Charles, and in any case was certainly approved by him. The name was therefore adopted, and Charles "was pleased to offer of him selfe to bee enter'd one of the Society."

The Charter of Incorporation passed the Great Seal on July 15, 1662, and this is the date of foundation of the Society. Charles presented to it the magnificent mace which is still constantly used at every meeting of the Council and of the Society. In the Charter the King is described as Founder and Patron of the Society. Within a few years two further Charters were granted. The King also assisted the Society financially by giving it the grant of Chelsea College. It was later repurchased from the Fellows by the King.

The Royal Society has had other royal benefactors. In 1768 George III financed the Society's expedition to observe the transit of Venus. In 1825 George IV founded two Royal Medals, and the grant to provide these has been continued subsequently by succeeding monarchs.

Infectious Diseases and Public Health

An important measure for the prevention of infectious disease imported from without was the introduction of quarantine. Venice had been a pioneer in the prevention of plague, which was apt to be introduced from the Levant, and by the end of the fifteenth century its sanitary service was imposing in its efficiency. But in other areas, such as Milan and Marseilles, quarantine had been practised with good results. In England the practice remained for several generations solely a matter for the Court. It was designed to prevent the sovereign from being infected by ambassadors from countries in which plague was rampant. For example, in the plague which afflicted London in 1513, the Venetian ambassador was excluded from the Court for 40 days whenever a case of plague had occurred in his household. The well-known measures for preventing the spread of plague in London by marking and shutting up infected houses were supposed to have been devised by Henry VIII himself. These measures were further developed in later plagues, culminating in the plague of 1665.

Charles II touching for the King's Evil. Line-engraving by R. White, prefixed to John Browne, *Adeno-choiradelogia*, London, 1684.

Even more stringent measures were sometimes adopted by the sovereign to punish those who were supposed to have carried plague. For example, Queen Elizabeth had a gibbet set up at Windsor on which to hang anyone who had carried the plague or who had harboured infected or suspected persons. Charles I had a gibbet for a similar purpose at the gate of the Court at Woodstock.

There is in all the post-Renaissance period perhaps no parallel for the great interest which Edward VII took in the welfare of the tuberculous. It is well known that, when he saw that at a congress the emphasis had been laid on preventability of the disease, he asked the simple question, "If preventable, then why not prevented?" Since these words were spoken more and more emphasis has been placed on the preventive aspect of tuberculosis, with results which are at last becoming evident.

In recent times the development of public health measures has been assisted in various ways by the interest of the sovereign, but a discussion of these factors would extend this note beyond its legitimate scope. It must be borne in mind that many public health measures can be traced back to the wise reform of the Poor Law by Elizabeth I. So also can measures framed to control the irregular growth of towns. On July 7, 1580, Elizabeth signed at Nonesuch, near Epsom, a royal proclamation which was designed to check the growth of London beyond the boundaries of the City, to prevent the influx of "landless men" to these areas, and to limit the overcrowding which was developing in small rooms. These measures had great influence on later policy.

Royal Healers

In the introduction to this article reference was made to the Royal Touch, and it is perhaps fitting to close with a few brief notes on a practice which was exercised by most of the sovereigns of this land for over six hundred years.

The gift of healing by touching with the hands was supposed to be conferred on the sovereign at his Coronation. The disease treated was nearly always tuberculous cervical adenitis—scrofula, or "the King's Evil"—though other conditions such as blindness were dealt with in early times. In England the practice dates from 1066, when Edward the Confessor "cured" an affected girl. From the time of Edward I the practice increased, and it was formalized in a religious ceremony by Henry VII. Instead of a dole of one penny given to each patient, he gave each a gold "angel," which was hung round the neck. Elizabeth I took her healing duties seriously, but James I, sceptical regarding the efficacy of the method, had to be persuaded that for political reasons it was advisable to continue it.

The peak period of touching was reached in the reign of Charles II, who touched over 90,000 persons in 19 years. He is known to have touched as many as 600 men in a single day. Both Pepys and Evelyn described the elaborate religious ceremony when Charles was touching; on one occasion the crowds of patients were so great that six or seven of them were crushed to death. James II carried on the practice, but William would have none of it. It had a last lease of life under Anne, who saw in it a means of demonstrating her hereditary right to the throne. In the year 1712 she touched 200 persons at St. James's Palace. It is well known that one of these was a child of 30 months who was to become the lexicographer Samuel Johnson. Anne may have "cured" many patients, but she certainly did not cure Johnson, who bore until his death the disfigurement which resulted from scrofula. In this country the practice of touching finally disappeared on the accession of George I, who publicly referred certain applicants to the exiled Stuarts. It is all a fascinating story; but all our knowledge of it is derived from the learned commentary of a distinguished FitzPatrick Lecturer—which, incidentally, appeared in the coronation year of George V—and a full résumé of that work was published in the issue of this *Journal* on the coronation of George VI.

THE MEDICAL AND SCIENTIFIC EXPLOITS OF KING JAMES IV OF SCOTLAND

BY

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Although many kings and queens have been interested in the health of the nations they governed, and have done much to promote the advance of medical science, few monarchs have themselves conducted medical or scientific investigations, and still fewer have actually participated in the practice of medicine or surgery. In ancient times there was the example of Mithridates, King of Pontus in the century before the birth of Christ, one who might almost be called a royal toxicologist, who rendered himself immune to poisons by the self-administration of small doses, and who gave his name to that most famous of antidotes, mithridatum, which, along with theriac, retained its position in nearly every pharmacopoeia until the end of the eighteenth century. And, in more recent days, the practice of "the Royal Touch" in the treatment of "scrofula" or surgical tuberculosis, brought kings and queens into close contact with their afflicted subjects from the days of Edward the Confessor to those of Queen Anne, the strange ritual reaching its zenith in the time of Charles II, who it was said, "touched" more than six thousand persons in a single year (1660).

A story even stranger than that of mithridatum or of touching for "king's evil" concerns King James IV of Scotland, whose medical and scientific activities were perhaps unique in history. In his *Chronicles of Scotland* Robert Lindsay of Pitscottie writes: "This noble King James IV was well learned in the Art of Medicine, and also a cunning Chirurgener that none in his realm, that used that craft, but would take his Counsel in all their Proceedings."

The Personality and Background of James IV

In order to understand his medico-scientific exploits it is essential to know something of the King's character and of the condition of Scotland during his reign.

The young prince succeeded his father, James III, under peculiar and trying circumstances. At the age of 15 he was induced to lead a rebel army against the king, who was murdered as he fled from the battlefield of Sauchieburn, near Stirling, in 1488. It is said that he was so filled with remorse at having been partly responsible for his father's death that he wore a chain of iron around his waist for the remainder of his life. Although recorded to be "temperate in eating and drinking," James IV was a high-spirited youth, of whose various love affairs the most romantic concerned the beautiful Margaret Drummond, whom he might have married had she not been regarded as undesirable by those who favoured an English bride for the King. Accordingly, Margaret and her two sisters, Euphemia and Sybilla, were poisoned in 1501 at their father's house, Drummond Castle, and their tombs may still be seen in the choir of Dunblane Cathedral. Two years later James married Margaret Tudor, daughter of the English King Henry VII—a union of great significance to both countries, because the great-grandson of James and Margaret, James VI, became King of England, Scotland, and Ireland. The most graphic contemporary account of James IV is given by the Spanish Ambassador, Pedro de Ayala, who wrote in 1498, "The King is of noble stature and handsome complexion; he is feared by the bad, and loved and revered like a god by the good." An apt

linguist, he could speak not only Latin, French, German, Italian, and Spanish, but also Gaelic, "the language of the savages of Scotland," as Ayala calls it.

Scotland in the Time of James IV

Scotland was a prosperous country during the reign of James IV. Among the exports were hides, sheepskins, and wool, and large quantities of river salmon. The imports included linen and silk and much wine, though ale was still the chief drink and whisky was as yet unknown, as were tea, coffee, and tobacco. Early in his reign James became aware of the need for strong armed forces. The Scots were ever fighters; indeed, Ayala said that "they spend all their time in wars, and if there is no war they fight with one another, although since the present King came to the throne they do not dare to quarrel so much."

King James IV of Scotland, 1473–1513. (Reproduced, by permission, from the portrait in possession of the Hon. Mrs. Stirling of Keir.)

Although they had their amusements, only those which might be turned to military advantage were favoured, and in 1491 a law was passed forbidding "futeball, golfe, or uther sik unprofitable sports," but the practice of archery was still encouraged. The entry in the Accounts, in 1503, recording the purchase of "golfe-clubbes and balles to the King, 9s.," leads one to question whether the law against non-militant sports was very rigidly enforced.

It was at this time that Scotland took its place as a great naval power. The largest of the war vessels was the *Great Michael*, which was built of oak from the woods of Fife and was launched in 1511. All this military and naval activity suffered severely from the battle of Flodden, in 1513, which brought disaster to the Scottish nation and at which King James IV was among the slain. Nevertheless, his was a noteworthy reign marked by a revival of learning and the beginning of systematic medical education.

The Universities of St. Andrews (1411) and Glasgow (1451) had already been founded, but in 1495 the King lent his patronage to the establishment of a university at Aberdeen, the first British university to give instruction in medicine. The individual responsible for this teaching was called the "mediciner," and his salary was £12 a year, besides the right of salmon fishing in the River Don. A few years later, in 1505, the Town Council of Edinburgh granted a "Seal of Cause," or Charter of Privileges, to the surgeons and barber-surgeons of Edinburgh, a document ratified by the King in the following year. In this manner there was established the body which became the Royal College of Surgeons of Edinburgh. Thus King James IV was closely associated with the beginnings of the teaching of medicine and surgery in Scotland.

Another noteworthy cultural event during the reign of James IV was the setting-up of a printing press at Edinburgh in 1507 by Walter Chepman and Androw Myllar, although it was not until 1568 that the first original medical work in the vernacular was printed, entitled *Ane Breve Description of the Pest*, by Gilbert Skene.

Public Health Legislations under James IV

The mention of "pest," or plague, recalls the fact that bubonic plague was widespread in Scotland at about this time. There were various laws to restrict the movements of travellers in plague-stricken areas, and the importation of English cloth was forbidden. Official scavengers were first employed in Edinburgh in 1499, and the notification of plague was made compulsory in 1505. Still more enlightened was a letter sent by the King to all burghs of Scotland in 1513, which showed that he had given considerable thought to matters of public health. His suggestions included the isolation of plague victims, the expulsion of beggars and vagrants, and the destruction of dogs, cats, and pigs in the streets. Already, in 1497, he had instituted measures for the isolation of those suffering from syphilis, the "Strange seiknes of Nappilis," which, following its dramatic appearance at Naples, had spread to Scotland, where it was known as grandgore or grantgor.

Treatment was strongly discouraged, probably because the cure, at that time, was worse than the disease.

The King as Medical Practitioner and Dentist

It is unfortunate that the records of the King's activities in the field of medicine are so scanty—derived mainly from the Lord High Treasurer's Accounts. One must be careful to avoid erroneous conclusions, and the fact that the King disbursed various sums to sick or blind or injured persons need not imply that he was concerned in the treatment. Many payments to doctors or "leeches" are recorded, and also to apothecaries or "pottingers," and more rarely to "surrigicos" or "barbours," as in the case of "ane man new schorne of the stane" at Coupar Angus in 1496, which would appear to have been an operation of lithotomy.

For the most part those payments seem to be merely instances of royal generosity, but there are other entries which indicate clearly that King James IV was not always content to be a mere onlooker, but determined, on occasion, to test his own skill, although he wisely limited his activities to the dressing of wounds, blood letting, and the extractions of teeth.

Of the first mentioned, this is but a single entry, dated July, 1504—"for claith to be wippes to Johne Balfouris sair leg quilk the King helit, 2s." Apparently the King himself was responsible for the healing of John Balfour's leg, and paid two shillings for the surgical swabs or "wippes."

Still more interesting are those entries which suggest that the King actually paid his subjects for the privilege of allowing him to act as surgeon. Thus, an entry in 1491 is as follows: "To Domynico, to gif the King leve to lat him bluid, 28s."; and it is interesting to note that in the same year the King himself was bled by a "leech," the record stating, "To a leyche that leyt the King blud, 28s." The payment, though of equal amount, is on this occasion the more usual one of patient to doctor, and not vice versa.

James IV also showed a lively interest in dentistry. In 1503 he purchased "ane turcase to tak out teith," and was himself the patient, when he paid "to the barbour that com to tak furth the Kingis tuth, 14s." Not content with this, he must needs act as dental surgeon and pay compensation to the patient, as he had done previously in blood-letting. Thus we find in 1511 an item, "To ane fallow, because the King pullit furth his teth, 14s." And in that same year we discover the strangest happening of all, when the King actually operated upon one of his own barber-surgeons, extracting two of his teeth. The entry states, "To Kynnard the barbour for twa teith drawn furth of his hed be the king, 14s." Apparently the dentist's fee of 14s. was only half of the fee paid for blood-letting, 28s.

The evidence that King James IV practised both of those activities appears to be quite definite, despite the unfortunately scanty record. One wishes that the victims of the royal favour had left some written record of their own feelings.

Experiments in Chemistry and in Aviation

Of the King's investigations in the field of science contemporary records are more informative.

King James's interest in chemistry, or rather in alchemy, coincided with the time of residence in Scotland of an Italian named John Damian, repeatedly designated in the Lord High Treasurer's Accounts as "Maister John," or as "the Franch leich" or "mediciner." He stood high in the King's estimation, and the two collaborated in many experiments. The King paid Damian well, and made him Abbot of Tungland in Galloway, although he had no ecclesiastical qualifications at all. John Leslie in his *History of Scotland* considered Damian a complete charlatan and an "ingenious beguiler." William Dunbar (1465–1530) lampooned him in a poem as "The Feigned Friar of Tungland":

> In pottingry he wrocht gryt pyne,
> He murdreist mony in medecyne . . .
> In leichcraft he was homicyd.

The experiments of the King and the "friar" were concerned mainly with the transmutation of other metals into gold. Laboratories were set up at Stirling and Linlithgow, and the search for the "quintessence" was continued for some years, involving considerable expenditure for coal and wood, and for saltpetre, quicksilver, and aqua vitae. This mediaeval quest by the two alchemists was rudely interrupted by an accident which befell John Damian while he was conducting what must have been one of the earliest experiments in aviation, in 1507. Certainly it was a bold venture on his part to equip himself with a pair of wings made of feathers, and coupled to his shoulders, and, so equipped, to leap from the cliff on which Stirling Castle is built. Indeed, he was fortunate to escape with nothing more than a broken thigh and the loss of prestige. It is recorded that the people who had assembled to watch the experiment "were like to split of laughter," and few sympathized with the unfortunate aviator.

Marooned Children and United Twins

The inquiring attitude of mind so apparent in King James IV is further exemplified in his experiment in the rearing of two children in isolation, which has often been described, but nowhere so clearly as by Lindsay the historian. The King, eager to know in what tongue a child would speak if isolated from the speaking world during its early years, caused two children to be marooned with a deaf-and-dumb nurse on the island of Inchkeith. Lindsay writes, "The King gart take a dumb woman and put her into Inch Keith, and gave her two young Bairns in company with her and gart furnished them with al Necessaries . . . desiring to understand the Language thir Bairns could speak when they came of lawful age. Some say they spak guid Hebrew. But as to my self, I know not." The historian wisely refrains from giving an opinion. Certainly he does not subscribe to the "Hebrew" idea.

During the reign of James IV there was born in Scotland a set of united twins, or "Siamese" twins as we now sometimes call them (after the famous Siamese couple who were born in 1811 and lived for 63 years). The King took a keen interest in the "monster," which had two heads and two bodies, "but from the Waste down, there was but one personage." King James caused "them" to be taught to sing two parts, "the one the Treble, and the other the Tenor, which was very sweet and melodious to hear." They also learned to speak a number of different languages, and lived to the age of 28 years.

Conclusion

Strange as were those exploits of King James IV, there can be no doubt that he was a man of inquiring mind, with a vision ahead of his time. He retained, as few of us do throughout our lives, that gift of curiosity, so valuable as an incentive to education, which seems to be innate in childhood but which grows smaller and less compelling in adult years. James IV of Scotland may well be regarded as a royal pioneer, and not merely a royal patron, of medicine and of science. In the long line of Stuart kings, with their curious mixtures of folly and wisdom, he stands out as one whose advanced views brought enlightenment to his realm and hastened the dawn of a new age. And though his reign ended by his death on Flodden Field it heralded the approach of happier times, of more widespread culture and education, and of steady advance in medicine and science.

"Because peradventure when a sick man hath had his disease at the height he hath at that instant taken *Tobacco*, and afterward his disease taking the natural course of declining, and consequently the patient of recovering his health, O then the *Tobacco* forsooth, was the worker of that miracle. Beside that, it is a thing well known to all physicians, that the apprehension and conceit of the patient hath by wakening and uniting the vital spirits, and so strengthening nature, a great power and virtue, to cure divers diseases. For an evident proof of mistaking in the like case, I pray you what foolish boy, what silly wench, what old doting wife, or ignorant country clown, is not a physician for a toothach, for the cholic, and divers such common diseases? Yea, will not every man withal, teach you a sundry cure for the same, and swear by that mean either himself, or some of his nearest kinsmen and friends was cured? And yet I hope no man is so foolish as to believe them. And all these toys do only proceed from the mistaking *non causam pro causa*, as I have already said, and so if a man chance to recover one of any disease, after he hath taken *Tobacco*, that must have the thanks of all. But by the contrary, if a man smoke himself to death with it (and many have done) O then some other disease must bear the blame for that fault. So do old harlots thank their harlotry for their many years, that custom being healthful (say they) *ad purgandos Renes*, but never have mind how many die of the pox in the flower of their youth." From *A Counterblaste to Tobacco* (1604), written by King James I of England.

BRONCHIECTASIS: A STUDY CENTRED ON BEDFORD AND ITS ENVIRONS*

BY

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Bronchiectasis is usually regarded as a serious disease, commonly causing much disability, needing surgical intervention if at all possible, and leading to an early death. This investigation was planned to obtain some idea of its incidence within the specified area of Bedford and its environs, to analyse the severity of its symptoms, to observe the effects of treatment, and then to consider whether the gloomy prognosis and the hasty recourse to surgery often advised are justified in more than a small percentage of patients.

The first description of bronchial dilatation was written by Laennec in 1819—the term "bronchiectasis" was introduced later in Swaine's translation of Hasse (1846). The next century saw the publication of many articles discussing it from various aspects; the most complete was that of Clark, Hadley, and Chaplin (1894). Over this period the disease became known in its classical form, and only after the introduction of bronchography was it appreciated that less severe examples arose. Attention was drawn to this by Bezançon and his colleagues (1924) and by Wall and Hoyle (1933). During the last war the opportunity was taken to prove that it was relatively common among those who had been passed as fit for military service—in England by Martin and Berridge (1942), and in America by Fine and Steinhausen (1946). It is clear, therefore, that bronchiectasis may exist either as a serious handicap or in very much slighter degree; the former type of case has tended to gravitate to the teaching or other large hospitals for diagnosis and treatment, whereas the latter has been described principally in groups of selected material. Descriptions of the disease have come mainly from these hospitals, and information about bronchiectasis as it occurs among a given population of all ages is incomplete and scanty.

In this paper a general study of the subject has been made, and the findings have been discussed and contrasted with those reported elsewhere. A number of differences have been found, and, though little that is new has been added, the general picture of the disease which emerges is certainly unlike that most often described.

Material and Criteria of Diagnosis

The investigation was conducted over a period of five years (1947–51) from a chest clinic responsible for a population of approximately 150,000, centred on the borough and suburbs of Bedford, which contain over 60,000 inhabitants and are surrounded by small urban and rural communities. Most patients were referred for diagnosis or found in the course of routine radiography, but 25 adults and 5 children were sent for observation and treatment with the diagnosis already confirmed. No case of bronchiectasis arising in the course of a disease of more consequence to the patient than the dilatation itself has been included—and hence no bronchiectasis associated with conditions such as carcinoma of the bronchus or post-primary tuberculosis.

*Based on an essay recorded as *proxime accessit* for the Nathaniel Bishop Harman Prize, 1952.

In the past, criteria of diagnosis have varied greatly. For instance, Farrell (1936) diagnosed bronchiectasis on a plain radiograph even if iodized oil showed no dilatation, and others have done likewise whenever the alveoli failed to fill. Bradshaw, Putney, and Clerf (1941) and others have been satisfied with the evidence obtained on bronchoscopic examination. Only a few authors, among whom Ogilvie (1941) may be mentioned, have drawn attention to any difficulty in interpreting dilatation on bronchograms. In this investigation some uncertainty in deciding whether bronchiectasis was present has been experienced in a small proportion, and no bronchi that have tapered towards the periphery or any that were partially filled, unless also grossly dilated, have been judged ectatic. A number of borderline cases have been omitted, and those included have been viewed by two or more observers, all of whom have diagnosed bronchial dilatation independently.

Incidence, Distribution, and Aetiology

Unequivocal bronchiectasis, proved by bronchogram, was found in 166 patients (137 adults and 29 children); 87 were male and 79 female. A further 48 cases of undoubted bronchiectasis were discovered, though not confirmed by bronchograms because of age, small respiratory reserve, or refusal to consent to the procedure. In addition to these two groups 75 cases possibly had bronchiectasis, but lacked abnormal physical signs, a positive radiograph, or a history of an aetiological condition from which symptoms could be traced. Therefore, although some of these, if subjected to a bronchogram, would undoubtedly have been shown to have bronchial dilatation, they must be excluded from any calculation. With these reservations it would seem fair to include the proved cases and the strongly suspected but not confirmed cases (214 in all) as an estimate of the approximate number discovered in this selected population of 150,000 during the period of five years. When 14 cases are subtracted for deaths, removals from the district, and inability to trace, 200 persons with bronchiectasis were living in the area at the end of 1951—an incidence of 1.3 per 1,000. Here it should be noted that further calculations shown in this paper relate only to the 166 cases confirmed by bronchograms unless it is stated otherwise.

The distribution of the ectasis was right-sided in 40, left-sided in 39, and bilateral in 87. Bronchographic filling was complete on both sides to the tertiary or quaternary branches in just over one-half, in 23 there was unilateral filling alone, in 3 only reports were available, and in the rest there was some imperfection, usually a small one, in the bronchogram. The type of dilatation was observed in 163 patients, and was found to be cylindrical or fusiform in 100, saccular or cystic in 4, and a combination of the two or mixed in 59. The number of lobes known to be implicated averaged 2.6 over the whole series, but some of them were damaged in part only. Involvement of the left lower lobe was accompanied by dilatation in the lingula in 87 out of 109 patients. The latter was complete in 55 and partial in 32; the inferior branch of the lingula was most often affected, and the axillary branch of the superior division most often escaped. Out of 129 lower lobes which were completely filled and visualized, the apical branch escaped dilatation on 62 occasions when the rest of the lobe was ectatic. The right lower lobe was bronchiectatic on 84 occasions, and the extent of the disease was in many instances less than on the left side.

Bronchiectasis of an area or areas totalling less than the size of the right middle lobe has been described as segmental in this paper, although it was often much less in degree. Such dilatation was present in 32 patients, being unilateral in 29 and bilateral in 3.

The aetiological factors thought to be responsible for the development of bronchiectasis were investigated; great care was taken to obtain an accurate history from the patient or,

where necessary, from relations. A definite illness from which symptoms started was recorded by the majority, but in a few without regular symptoms the history of a specific respiratory illness or a radiograph typical of calcified primary tuberculosis has been accepted as evidence of the antecedent factor. Because of the difficulties of exact diagnosis the term "pneumonia" has been used throughout this paper without further qualification to include all acute respiratory infections. Chronic or recurrent bronchitis and cough since infancy have been assigned as factors rather than classed as of unknown aetiology, for it is felt that this group of chronic respiratory catarrh, whatever its real origin, is important enough to be acknowledged. No mention has been made of the congenital anomaly as a cause, for the reason that it is not susceptible of proof, and not even admitted by F. P. L. Lander (1947, personal communication) and by other authorities. Pneumonia was judged to be responsible for 43%, pertussis and the infectious fevers for 16%, recurrent bronchitis and cough since infancy for 21%, primary tuberculosis for 7%, and mustard gas for 5%. A number of miscellaneous causes made up the total.

Symptoms, Signs, and Complications

The symptoms and clinical aspects of the disease are analysed in considerable detail in order that they may be contrasted with those which have been described by others. Particular importance has been attached to this, as most of the well-known studies on which opinion largely rests were published before the arrival of the antibiotics—later reviews have concerned themselves mainly with the results of treatment.

In 73 patients symptoms started before the age of 10; in each succeeding decade the number was smaller, being five in the sixth decade. The age at which patients came under observation was spread over an even longer period and was most common in the fourth decade. The length of time that symptoms had been present averaged 17.9 years. The individual duration of symptoms varied from two weeks to 48 years, but in only 15 patients was it over 34 years. Twenty-two adults and 12 children were seen in whom the history of symptoms was less than one year. Forty-seven patients had been radiographed previously and not diagnosed as having bronchiectasis; 21 of them had been in hospitals with a respiratory affection, and 6 had been in sanatoria though non-tuberculous.

The reasons why these patients came under observation were noted: 34 were referred as possible cases of pulmonary tuberculosis, 23 for haemoptysis, 28 for chronic cough or bronchitis, and 19 following pneumonia; in only 12 was bronchiectasis suspected, but 30 were sent with the diagnosis already established (in 4 this had been done locally); 6 were regularly attending the clinic and were thought to have phthisis, and 12 were found when examined as contacts of this disease; only 2 had been diagnosed previously by mass miniature fluorography.

Cough was always present in 134, intermittent in 20, and absent in 12. The daily amount of sputum, however, was often hard to determine. Those who had been in hospital on 24-hourly sputum measurements were capable of estimating the quantity accurately, but many others were found on trial to exaggerate the amount considerably. It is also likely that some erred in the opposite direction for aesthetic reasons. The figure taken in this paper is the amount which was judged to be the patient's average throughout the year, apart from exacerbations. More than 50 have had actual sputum measurements performed over periods up to several weeks, and in the others careful and repeated inquiry was made. The average volume of sputum in the 122 patients who reported it as continuously present was 1½ oz. (43 ml.) each 24 hours, the highest reading being 8 oz. (230 ml.), and the lowest being a trace, estimated as ¼ oz. (7 ml.). It was intermittent in 22 patients, and a further 22, of whom 12 were children, stated that they had no sputum. It was noted as fetid in 17 patients (16 adults and 1 child), but in only 2 was the fetor sufficient to taint the air of a room.

Very varying percentages for the occurrence of haemoptysis have been given by different authors, many of whom have not defined their use of the term. Among these patients 46 had suffered from stained sputum and 34 others had haemoptysis of at least two teaspoonfuls of blood on one or more occasions; in only seven was ½ pint (235 ml.) exceeded. There was no obvious relationship between the type of bronchiectasis and the liability to bleeding, but with one exception the larger haemorrhages took place in bronchiectasis of considerable extent.

Dyspnoea on exertion has been described as a constant symptom in many of the earlier studies. In this series the patient's own opinion has been accepted regarding the degree of disability present: 26 had dyspnoea on slight exertion, 77 on moderate exertion, 33 on severe exertion, and 30 did not suffer from dyspnoea.

Abnormal physical signs in the chest are present in a high proportion of those with bronchiectasis, the most typical being persistent moist sounds localized to the damaged area. Obvious signs were always present on examination in 123 of these patients, but they accompanied segmental bronchiectasis in only 7 cases out of 32. It is difficult to differentiate the early stages of clubbing of the fingers from variations of the normal nail-bed and its overlying skin. Among these patients 47 were judged to have early clubbing, 25 well-developed clubbing, and 3 marked clubbing. In 3 children it arose or increased during observation, and in 2 adults it was observed to diminish after effective treatment.

As in about half these patients the onset occurred during the first decade it might be expected that many would have been of poor physique; 8 children and 13 adults were of this type. The ability to work has been stated to be much diminished. All the children in this series were able to attend school, though 9 of them lost time, especially during the winter months, with symptoms not of bronchiectasis but of recurrent bronchitis. Out of the 130 adults under the age of 60, 5 were unable to work or to conduct their household duties; one of them was incapacitated by myocardial ischaemia. The social implications of the disease were slight. No divorces or suicides occurred; neither did there appear to be any undue difficulties in marriage.

Sinusitis was not especially searched for, though all who had suggestive symptoms were investigated; definite infection was found in 39 adults and 14 children. Asthma was present in nine of the whole number. Pneumonia arising, apart from the causal illness, was reported in 67 patients, but special attention was paid to a history of this complication. During the observation period it was known to have occurred in 16 patients—in 6 on more than one occasion, and in 3 for the first time. Seven had frank haemoptysis, the largest being 2 pints (1,140 ml.); all had had haemoptysis previously. One patient developed a pulmonary abscess, and another a spontaneous pneumothorax. Otherwise there were no serious complications except those to be mentioned in the patients who died.

Bearing in mind the 166 patients as a whole, it is instructive to contrast the extent of the disease and the severity of symptoms in different groups. Short comparisons are drawn between the children and adults, between the cases diagnosed by teaching or large hospitals and the remainder, and between the segmental bronchiectatics and those more extensively affected.

Among the children, cough without sputum, due to its being swallowed, was noticeable, but fetor was uncommon. Haemoptysis was also less frequent and smaller in amount, the largest being 2 oz. (57 ml.). Dyspnoea on exertion was less obvious even with extensive disease, and localizing physical signs were more often obscured by generalized bronchitis. The presence of the saccular type of dilatation was much less common, and there were no cases of the thin-walled cystic type. On the other hand, poor general development and symptoms of sinus infection were more pronounced than among the adults.

Twenty-six cases were diagnosed in teaching hospitals, and when compared with the remainder they were found to be

TABLE I.—*Numbers and Percentages of Various Symptoms and Physical Signs Contrasted in Cases of Bronchiectasis Diagnosed in Teaching Hospitals and the Remainder*

Symptom, Sign, or Condition	26 Cases of Bronchiectasis Diagnosed in Teaching Hospitals (21 Adults, 5 Children)				Remaining 140 Cases of Bronchiectasis (116 Adults, 24 Children)			
	Adults	Children	Total No.	Total %	Adults	Children	Total No.	Total %
Regular cough	21	5	26	100·0	93	15	108	77·1
Regular sputum	21	5	26	100·0	90	6	96	68·6
Fetid sputum	8	1	9	34·6	8	—	8	5·5
Developed clubbing	6	1	7	26·9	16	2	18	12·9
Pronounced clubbing	1	—	1	3·8	2	—	2	1·5
Constant abnormal chest signs	21	5	26	100·0	81	16	97	69·2
Haemoptysis (½ oz. or more)	7	2	9	34·6	24	1	25	17·8
Recurrent pneumonia	13	3	16	61·5	45	6	51	36·4
Presence of sinusitis	14	4	18	69·2	25	10	35	25·0
Segmental bronchiectasis	1	—	1	3·8	26	5	31	22·1
Average age in years on diagnosis	20·4	9·0	17·4	—	38·4	7·6	33·1	—
Average amount of sputum (in oz.)	2·5	2·5	2·5	—	1·0	0·1	0·8	—
Average number of lobes affected	3·1	4·2	3·3	—	2·4	2·0	2·4	—

TABLE II.—*Numbers and Percentages of Various Symptoms and Physical Signs Contrasted in Cases of Segmental Bronchiectasis and the Remainder*

Symptom, Sign, or Condition	32 Cases of Segmental Bronchiectasis (27 Adults, 5 Children)				Remaining 134 Cases of Bronchiectasis (110 Adults, 24 Children)			
	Adults	Children	Total No.	Total %	Adults	Children	Total No.	Total %
Regular cough	20	2	22	68·8	94	18	112	83·6
Regular sputum	19	—	19	59·4	92	11	103	76·9
Fetid sputum	1	—	1	3·1	15	1	16	11·9
Clubbing of all degrees	9	—	9	28·1	56	10	66	49·3
Constant abnormal chest signs	7	—	7	21·8	95	21	116	86·5
Haemoptysis (½ oz. or more)	6	—	6	18·8	25	3	28	20·9
Recurrent pneumonia	7	1	8	25·0	51	8	59	44·0
No symptoms	6	3	9	28·1	17	6	23	17·2
Average amount of sputum (in oz.)	0·5	—	0·4	—	1·5	0·7	1·3	—

of a much severer type (Table I). Cough, sputum, and abnormal physical signs were universal. Fetid sputum, advanced degrees of clubbing of the fingers, large haemoptyses, and recurrent pneumonia were much commoner, as were symptoms of sinusitis. More lobes were bronchiectatic, and there was only one with ectasis of segmental extent.

As regards segmental bronchiectasis, with the exception of haemoptysis all symptoms and signs were less severe than in the patients with more extensive disease (Table II). There were no regular symptoms in 28% of them as against 17% of the remainder.

Diagnosis

The diagnosis of bronchiectasis has rightly been held to depend on the triad of a relevant history of illness from which symptoms started, the presence of abnormal physical signs, and a radiological abnormality. Ogilvie (1941) and others have stated that these three factors are present in a very high percentage of bronchiectatics; and among the patients who were diagnosed at teaching hospitals this triad was present in all. However, when the whole group is analysed 32 had no regular symptoms, 43 had no constant localizing abnormal physical signs, but only 3 had normal postero-anterior radiographs. This latter finding might be due to the fact that those with normal radiographs were not subjected to bronchograms, but actually over 50 were done during this survey with negative results in the absence of radiological abnormalities when symptoms or history were suggestive of bronchiectasis. All radiographs were taken with a modern apparatus at 6 ft. (1.8 metres) distance; in some instances they showed changes which were difficult or impossible to see in earlier films of poorer definition. For reasons of space only brief comment on the radiological changes found among these patients can be given.

The well-marked abnormalities which have often been described, such as opacities suggestive of pneumonia, circular or ring shadows, and the obvious triangular shadows associated with lobar collapse, were noted many times. However, a number of changes of a minor character must be emphasized, particularly as quite often it is only by close attention to them that bronchiectasis may be suspected. Slight lateral shift of the heart or mediastinum and alteration in the position or shape of the interlobar septa may be mentioned. A change in the position or shape of the hemi-diaphragm, localized bulging or "tenting" of the diaphragm, and reduction in size or obliteration of the costophrenic angles are further signs. The shape and position of the hilar shadows and the presence of hilar calcifications may be of consequence. Diminution of the pulmonary markings in compensatory emphysema and increase of these markings, due to crowding or to actual broadening of them with absence of tapering, are most important abnormalities. Finally, the shadows caused by the collapse of segments or subsegments of the lung may be small, not dense, and consist only of a few crowded but usually thickened pulmonary markings, often, but not always, of roughly triangular shape. The constancy of the radiographic changes in this series was noteworthy, except for such alterations as arise with superadded pneumonia or the temporary retention of sputum. In only one patient, a boy of 13, was an abnormality due to a collapsed middle lobe seen to disappear gradually, leaving a normal radiograph, though bronchial dilatation still persisted.

Prognosis

It is impossible to judge the prognosis of a chronic disease in a series of patients observed for only a few years, but, while acknowledging their statistical inadequacy, some conclusions may be drawn. The group of 166 patients was followed for a total of 498 person-years—an average of three years each. The largest number of cases came under observation during the first two years, but 23 were diagnosed in 1951. During this time six patients died and three were lost sight of. In the youngest patient who died death was certified as occurring from exhaustion; she was a girl of 14 who had extensive bilateral bronchiectasis. Her death may have been complicated by pneumonia, and she never had the benefit of any adequate treatment or of penicillin. The remaining patients who died were all over the age of 40: one died of the late effects of deep radiation following a mastectomy for carcinoma, which had caused bilateral bronchiectasis; the other deaths were due to cor pulmonale complicating bilateral disease, a coronary thrombosis, status asthmaticus, and heart failure following chronic bronchitis and asthma (Table III). The average length of symptoms in those dying was 14.5 years, and the average time from diagnosis was 4.75 years. None of these patients could have been treated surgically because of the extent of the disease or other reasons.

Among the 48 cases unconfirmed by bronchograms there were two deaths; one which was certified as due to asthma in a girl of 9; the other from cardiac failure complicated by hypertension in a woman aged 75. Both these patients gave radiological evidence of extensive bilateral bronchiectasis.

Apart from its mortality, the morbidity of bronchial dilatation has been regarded as of essential consequence. In the relatively short period of the survey very little change was observed in the general condition of these patients. One who had had no sputum developed a trace after a respiratory

TABLE III.—*Details of Bronchiectasis Patients Dying During the Observation Period*

Case	Sex	Age at Death	Cause of Death	Period in Years Before Death		
				Symptoms Present	Disease Proved	Under Observation
Confirmed by Bronchogram						
A	F	14	Exhaustion	8	2	1
B	F	42	Pulmonary radiation disease	2½	1½	1
C	M	47	Cardiac failure plus chronic bronchitis and asthma ..	11	4	2
D	M	53	Status asthmaticus ..	20	1/12	1/12
E	F	62	Cor pulmonale ..	38½	21	2½
F	M	62	Coronary thrombosis	8	1	1
Average		48		14½	4½	1½
Not Confirmed by Bronchogram						
Y	F	9	Asthma	9	—	6/12
Z	F	75	Cardiac failure and hypertension ..	75	—	2
Average		42		42	—	1½

infection. Three patients, on the other hand, reported a reduction in sputum, apart from the use of any antibiotics and any initial improvement noted from medical treatment. No positive evidence of increase in the extent of the condition was obtained, but a second bronchogram was done in only 15 patients.

Treatment

The treatment of bronchiectasis may be medical or surgical, the latter to-day being almost synonymous with pulmonary resection. The measures described as medical require further elaboration. Postural drainage, either by intermittent "tipping" or raising the foot of the bed on blocks, was advised in every case in which this caused expectoration. Physiotherapy, including breathing exercises and instruction in postural coughing, was also ordered. The way in which the antibiotics were given varied during the period, but, broadly speaking, the methods described by Kay and Meade (1945) and Olsen (1948) were used for penicillin and streptomycin, and that reported by Wynn-Williams and Moyes (1951) for chloramphenicol.

There were 86 patients with ½ oz. (14 ml.) or less of sputum daily who were not thought to be in need of treatment, apart from those who found early morning "tipping" helpful. Patients with more than this amount of sputum were always given instruction in postural drainage and breathing exercises. This simple treatment rendered fetid sputum odourless in every case in which it was tried. Moreover, whenever posture resulted in the coughing up of sputum, it always reduced the total quantity when diligently carried out, and also decreased any toxaemia present. Chemotherapy* was given in addition if there was an exacerbation of symptoms, an upper respiratory infection accompanied by fever, bronchitis, pneumonia, or persistent toxaemia.

Twenty-six patients were admitted to hospital and given penicillin, in 10 of whom it was supported by streptomycin; 23 others were treated with chloramphenicol, and in 2 aureomycin was used. The results obtained from these antibiotics were excellent, the reduction in sputum obtained being in the nature of 50% with penicillin, and 60% if streptomycin was added. Chloramphenicol was even more effective. Unfortunately, this improvement was not maintained, and a gradual increase in sputum occurred in most patients after an interval which varied from a few days to several months. It was found that the majority had a basic level of sputum which could be lowered by antibiotics but which gradually reappeared. Prolonging the course of treatment was not found to lengthen the period of improvement, and, latterly, treatment was given for only a few days after maximum benefit was obtained. The complications arising in this series were treated medically with the exception of a pulmonary abscess, which, failing to respond, was successfully drained. Chemotherapy was particularly valuable in controlling the attacks of recurrent pneumonia, and the tendency for each succeeding infection to cause deterioration either by increase of sputum or by toxaemia appeared by clinical estimates to be removed.

Surgery was considered whenever patients had 2 oz. (57 ml.) or more of sputum daily and were inconvenienced by it. Frequently recurrent pneumonia, and haemoptysis of considerable size or if often repeated, were adjudged to be additional indications for resection. Surgery was not advised for prophylactic purposes nor for underlying toxaemia, as this was not found to be persistent in any who were suitable for surgery. There were 51 patients who had at least 2 oz. (57 ml.) of sputum, but in only 10 of them was the condition unilateral; 17 other cases had bilateral disease not affecting more than three lobes. Of the first group two were operated on and four were quite unsuitable for surgery because of advanced age, concurrent bronchitis, or asthma. Of the second group two were also operated on and three were unsuitable for various reasons. There were left, therefore, 4 patients with unilateral and 12 with bilateral disease who had 2 oz. (57 ml.) or more of sputum and were fit for operation should they consent to it.

Resection of one or more lobes was carried out on six patients, the operations being done in thoracic centres of repute. Two were much improved though left with a trace of sputum each day; one, although left with 2 oz. (57 ml.) of sputum, was permanently improved from 6 oz. (170 ml.) and one was unchanged. The remaining two developed broncho-pleural fistulae and empyemata after operation; of these, one is much worse functionally than before operation, with an unchanged amount of sputum, and the other has much less sputum but is more dyspnoeic. Two further patients had had surgical treatment many years previously—one a phrenic crush with no improvement, the other an artificial pneumothorax with permanent reduction of the sputum by almost a half.

Apart from the treatment detailed above, a number of these patients were treated by their general practitioners with one of the sulphonamides or penicillin for exacerbations of respiratory infection with satisfactory results.

Discussion

While little information is available regarding the true incidence of bronchiectasis among the general population, there are statistics which show the number of bronchiectatics admitted to hospital compared with other diseases. The results of post-mortem examinations on similar material are also available. Out-patient figures might be expected to be of greater value, but they show much the same results as those on in-patients. More recently, information has been obtained from surveys by mass miniature fluorography, although proof of the disease by bronchogram is lacking in most cases. N. Smith (1952, personal communication) found nearly 1 per 1,000 among 6,888,127 persons fluorographed. These figures and that (1.3 per 1,000) found here do not support the statements of Ochsner (1930) and Holinger (1943) that bronchiectasis is commoner than tuberculosis. However, it is certain that neither this review nor any other has discovered every case of bronchiectasis in an area. A survey somewhat similar but perhaps more comprehensive than the one described here is that of Mackenzie (1950), who investigated children of school age suspected of this disease in Leicester and found an incidence of 2.9 per 1,000 among those examined. This is probably the highest incidence yet reported in an unselected group, but unfortunately his criteria of diagnosis are unpublished. Certainly in Bedford, where excellent co-operation exists with the school medical authorities, no such figure could be obtained, only 29 cases being confirmed among about 33,000 children.

The distribution of the bronchial dilatation found in this survey is rather different from that in most others, as the left

*The terms "chemotherapy" and "antibiotics" are used as synonymous throughout this paper.

side was not found to be affected more often than the right, although the area involved was greater. A little over half the cases were bilateral, but this figure is not as high as that of Walsh and Meyer (1938), who reported 68%; any differences in this respect are probably related to the completeness of the filling of the bronchi.

Despite the large numbers of reviews consulted for comparative purposes, that of Martin and Berridge (1942) contained the sole description of bronchiectasis of less than lobar extent arising among patients with wider-spread disease, though cases of segmental bronchiectasis have been recorded by Hall (1938), Chapman and Wiggins (1941), and others. It is therefore impossible to decide whether the finding of 32 patients with segmental bronchiectasis among 166 is unusual. From the evidence of this survey it would not appear to be common in the material attending the teaching hospitals, as it was encountered only once among the 26 who had been diagnosed in this way. Little need be said about the type of dilatation disclosed except that in a large proportion it was mixed and could not be described accurately as of one shape.

The causal factors found responsible were in the main similar to those reported previously. Mustard gas and primary pulmonary tuberculosis figured in larger numbers than in any other general series. The first was responsible for eight cases, whereas hitherto only isolated instances have been recorded except by Bonnamour, Badolle, and Gaillard (1929), who devoted part of a monograph to the subject, and Carr, Denman, and Skinner (1947), who investigated a number of individuals accidentally exposed to mustard gas. Primary tuberculosis was the responsible cause in 12, the highest number reported previously being 2 out of 33 children by Raia (1938). One reason for past omissions may be that such children are treated, and described, as tuberculous; another that bronchiectasis due to primary tuberculosis causes so little disability that it is not often referred for an opinion. The latter statement may appear open to argument, especially in the light of the work of Brock (1950); but in the present series symptoms were noticeably few, and the only complication that arose in this group was a single attack of pneumonia. It is, however, freely admitted that if pathological examination were always possible primary tuberculosis might well turn out to be a relatively common cause of bronchiectasis, and under such conditions there might be little difference in symptoms between dilatations due to this cause and other aetiological factors.

Special importance must attach to the symptoms of bronchiectasis, as much discomfort, unhappiness, and disability has been attributed to them. Churchill (1938) stated that many patients found employment difficult or impossible, and that suicide and divorce were commoner than among the normal public. In this series the cough and quantity of sputum were much less than usually recorded, often approaching more nearly to selected cases of "dry" or "haemorrhagic" bronchiectasis, and persistent fetid sputum was not encountered. Dyspnoea on exertion and abnormal physical signs have been reported, especially in the earlier accounts, as almost constant, but were less severe here. It should be particularly noted that only five patients under the age of 60, one of whom was incapacitated by a coronary thrombosis, were unable to work or conduct their household duties. The general physical development of any group is difficult to estimate, but poor physique appeared to be less obvious than is often described. No special difficulty in social adjustment was observed.

On the other hand the age of onset and duration of symptoms were very similar to those recorded elsewhere, although in 34 cases which were diagnosed the symptoms had lasted less than one year. Haemoptysis occurred as often as in most series and pneumonia was also very common, although the results of treatment were so satisfactory that this complication may now be rated as a relatively minor one.

The diagnosis of bronchiectasis should have been made much easier through the advances of radiography, and yet 47 of these patients had been radiographed in the past and the diagnosis not established. In every instance there was a definite abnormality, although in some this was of small extent. Indifferent apparatus may be a partial explanation, but as a number had attended large hospitals this cannot be the only cause. In view of the widespread belief that bronchiectasis is often present with a normal postero-anterior radiograph, it is interesting that in only three patients was this view normal. This finding was not the result of the investigation only of patients with abnormal radiographs, as 91 bronchograms were done with negative results, and in over half these patients the plain film was normal but the history or physical signs suggested the possibility of the disease. It has been observed by a number of writers that if the triad of history, physical signs, and abnormal radiograph are present, bronchiectasis may be diagnosed with great confidence even in the absence of a bronchogram. No case was found in which this triad was present, and yet a bronchogram was normal. The use of iodized oil is really only necessary for diagnosis in the absence of one of these indications.

The prognosis of bronchial dilatation has been considered gloomy by most authorities. The basis of this opinion was laid by Clark and his colleagues (1894), and the papers of Perry and King (1940) and Bradshaw, Putney, and Clerf (1941) provided further evidence of the serious outlook of those with bronchiectasis when medically treated. In the present series six patients died during the period of observation. The duration of their symptoms was nearly as long (14.5 years) as that of the whole group, and they had been diagnosed for an average of 4.75 years before death. These results are different from those of Perry and King (1940), who found that among their patients the average length of symptoms before death was only five years, and also from the findings of Bradshaw and his co-workers (1941), who recorded that the average duration of life was only 1.8 years after diagnosis. It should be noted that over half the deaths in both series were caused by complications of the disease which are now amenable to chemotherapy, that the average age at death was much younger, and that heart failure, which accounted for half the deaths in this series, was a relatively infrequent cause in theirs. Less pessimistic figures were given by Wall and Hoyle (1933), who, over a short period, observed no deaths among 18 cases of "dry" bronchiectasis.

Practically all authorities have found that the prognosis of the surgically treated case is better than that of those which have only medical treatment, but I have failed to find a study in which the surgically treated have been compared with those who were recommended surgery but refused it. Moreover, the time during which the antibiotics have been in extensive use permits only a brief appreciation of their value. The evidence gathered during this survey suggests that the one-time common causes of death—pneumonia and other pyogenic complications—have now ceased to be important, and that a far higher proportion of patients in the future will die of unconnected diseases and of cor pulmonale secondary to extensive bronchiectasis. None of the six who died could at any period of their illness have been considered for operation, either because of the large areas involved or because of other factors. Furthermore, the disease was not observed to progress in extent or severity of symptoms, apart from those caused by diminished respiratory reserve in patients unsuitable for surgery.

The treatment of bronchiectasis is overshadowed by the pessimism shared by most physicians regarding medical measures. Alexander (1944), a surgeon, is one of the few who have drawn attention to the considerable benefits of non-surgical treatment, and to the fact that half the cases are unsuitable for surgery because of the widespread nature of their disease. This pessimism is due to a number of considerations, the most valid of which is the irreversibility of the underlying lesion. Of great importance, however, has been the almost universal belief in a bad prognosis—the opinion that symptomless areas are likely to become infected and also that the condition is steadily progressive. Further reasons lie in the difficulty with which some patients

can be persuaded to continue the most valuable exercise of postural drainage, and in the unwarranted assumption that the patient's life is usually a burden. Most writers think that the treatment of bronchiectasis is surgical in every case in which this is feasible. This bias was apparent even before the development of the modern technique of pulmonary resection, and has been greatly strengthened by its success. The advances of chemotherapy have been judged largely on their ability to render surgery safer. Seldom has it been stressed that their influence on medical treatment has been even more pronounced. It is admitted by some that small and relatively uninfected areas of bronchiectasis may not require excision, but this is by no means generally agreed.

Surgery was advised in this series for certain definite reasons, and not for every case in which it was technically possible. Some justification of this attitude must be sustained. Operation is usually recommended because of the severity of symptoms or because the prognosis of the disease is poor. On the first count it must be noted that very few patients who came into the operable class were bothered by their symptoms; only one actively desired operation, and he had never been treated by antibiotics. As regards prognosis, the evidence of this survey points to a great change in mortality trends, although the time of observation is too short for strict confirmation. In no operable case did the patient die during this period, no extension of the disease was seen, and deterioration in the general or symptomatic condition did not take place. It is not maintained that these misfortunes will cease to occur henceforth, but it is thought that there is enough evidence to suggest that they will not be common. As against this must be placed the definite if small mortality of lobectomy, and the greater one of multiple resections and pneumonectomy. Also, the complication rate of operation cannot be overlooked, nor is improvement inevitable. It seems, therefore, that resection for the purpose of avoiding future catastrophe is difficult to vindicate.

Although the points set out above are necessarily too brief to form a conclusive argument for limiting the number of bronchiectatics that are submitted to a major operation, it is doubted whether a large percentage of the total number are more suitable for resection than for modern medical treatment, which, if adequately advised and carried out, greatly limits the disability arising from the disease. Unfortunately, the cases that are most in need of help are those least amenable to surgery, and unless all the diseased areas can be removed the patient is still liable to complications. Moreover, in attempting the eradication of such a patchy disease, considerable portions of healthy lung are often sacrificed, in spite of the development of segmental resection. The social status and co-operation of the patient or parents in treatment may well be one of the decisive factors in deciding for or against intervention.

Summary

During a survey upon a population of nearly 150,000 lasting for five years 166 patients were found with bronchiectasis confirmed by bronchograms; a further 48 had undoubted bronchiectasis, but in the absence of confirmatory bronchograms they have been ignored in the detailed analysis. By combining these figures with certain deductions it is shown that bronchiectasis was present in at least 1.3 per thousand. The distribution and type of bronchiectasis found showed no great differences from those previously reported, but the aetiological factors responsible for its development showed an unusually large number of cases due to primary tuberculosis and mustard gas. The symptoms complained of were less severe and universal than those reported in most general series, and approached those found in selected groups who had been passed as fit for military service; only five patients under the age of 60 were incapacitated from work. Attention is drawn to the fact that in only three patients were postero-anterior radiographs normal. Comparisons are drawn between cases which had been diagnosed in teaching or large hospitals and the remainder, and prove conclusively that those diagnosed in such hospitals had more extensive disease and also severer symptoms. Those patients with disease of less than lobar extent proved, on the contrary, to have fewer symptoms than the rest.

The period under observation averaged three years, during which time there were six deaths, which all occurred in bilateral cases or from complications not due to bronchiectasis. There were no deaths from pneumonia or other pyogenic complications. The condition of the rest remained little changed. The treatment given was mainly medical, but six patients were treated by resection.

Reasons are given for postulating that the prognosis of the medically treated case is not so bad as has been stated previously, and that this is largely due to the advent of chemotherapy. Arguments are also brought forward to show that it may not be justifiable to advocate surgery whenever this is possible; that a high proportion of bronchiectatics are likely to remain well and little inconvenienced by their disease if competently treated by postural drainage and antibiotics; and that the latter statement applies particularly to the operable group.

I am much indebted to Dr. F. P. Lee Lander for his help in this investigation. My thanks are due to Dr. J. H. L. Easton, physician to the Bedford Hospital, and to the many practitioners of the area who referred patients for investigation. I am also indebted to Dr. E. N. Moyes, who performed many of the bronchograms, and to Dr. W. C. V. Brothwood, County Medical Officer for Bedfordshire, for his co-operation.

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Reconstruction Surgery and Traumatology, the first volume of which has just been published, is intended as an international annual survey of progress in reconstructive surgery of the locomotor system. Papers are published in English, French, or German, with summaries in all three languages. Leading authorities in several countries comprise the editorial board, and the English preface is contributed by Professor Sir Harry Platt. The first volume contains 262 pages of text and is well produced and profusely illustrated. The publishers are S. Karger, of Basle, and the price is 36 Swiss francs.

EFFECT OF MILK DIET ON P. CYNOMOLGI INFECTIONS IN MONKEYS

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Maegraith, Deegan, and Jones (1952) described the suppressive action of a retail whole-milk diet on blood-induced *Plasmodium berghei* infections in rats, and stated that the true significance of their observations would not be revealed until mosquito-transmitted infections were studied. We now report the results of a few experiments using *Plasmodium cynomolgi*, a monkey parasite closely resembling the human *Plasmodium vivax*; in two animals the infections were produced by inoculation of infective blood, in another two by intravenous inoculation of sporozoites. The object of the work was to see if *P. cynomolgi* behaved like *P. berghei* in animals kept on a milk diet, and to observe the effect (*a*) on sporogony, and (*b*) on the pre-erythrocytic cycle.

Details of Experiments

Five rhesus monkeys were used; three (M 121, M 122, M 127) were mature and two (M 120, M 126) were immature, weighing between 2½ and 3½ lb. (1.13 and 1.59 kg.). The animals were maintained on one or other of the following diets:

Normal diet: Biscuits (Spratt's ovals), green vegetables, apples, oranges, carrots, and retail whole milk. The diet was offered *ad lib.*

Milk diet: Retail whole milk to which was added 5 mg. vitamin B_1, 5 mg. vitamin B_6, and 50 mg. calcium pantothenate to a litre of milk. The diet was offered *ad lib.*

Samples of blood were taken daily from all animals. Thick and thin blood films were stained with Giemsa stain. The density of parasites in thin films was estimated and expressed as the number per 1,000 erythrocytes according to the method of Ed. and Et. Sergent (1952). Fifty fields of the 1/7 oil-immersion objective were examined in thick films.

Experiment I. Blood-Induced Infections.—Two monkeys, M 120 and M 121, were placed on the milk diet two days before infection. M 120, M 121, and a control animal, M 122, were infected intraperitoneally with 3 ml. of blood showing a 10% parasitaemia. M 120 remained on the milk diet until 19 days after infection, when the milk was replaced by the ordinary diet. On the thirtieth day after infection M 120 was superinfected intravenously with 2 ml. of blood showing a 5% parasitaemia of a homologous strain. M 120 was splenectomized 14 days after infection whilst on the milk diet and was returned to the normal diet 26 days after infection. Seventeen *Anopheles maculipennis* var. *atroparvus* were fed on M 121 12 days after infection, when apparently normal gametocytes were present in the blood. Individual mosquitoes were killed at suitable intervals and examined for oökinetes, oöcysts, and sporozoites. M 122 was splenectomized 27 days after infection.

Experiment II. Sporozoite-Induced Infections.—Sporozoites were obtained from infected mosquitoes *A. maculipennis* var. *atroparvus*) in the following manner. Salivary glands, heavily infected with sporozoites, were dissected out into chilled 15% monkey serum in Locke's fluid. These were lightly ground and inoculated intravenously. Two monkeys, M 126 and M 127, were placed on the milk diet two days before being infected in this manner. M 126 received a suspension of 36 infected glands. The animal underwent a liver biopsy by open abdominal operation seven days after infection and was returned to the normal diet 23 days after infection. The piece of liver taken from M 126 was fixed in Carnoy's fluid, sectioned, stained by the Giemsa-colophonium method, and examined for pre-erythrocytic schizonts. M 127 received a suspension of four infected glands and was returned to a normal diet 23 days after infection. As the normal course of sporozoite-induced parasitaemias of *P. cynomolgi* is well known in this laboratory at all levels of sporozoite loading, and as it varies from individual to individual within certain limits, it was not thought necessary to maintain a control in this experiment.

Results

All animals took well to the milk diet and none lost weight. Normal intake of milk was between 1 and 1½ pints (570 and 850 ml.) daily.

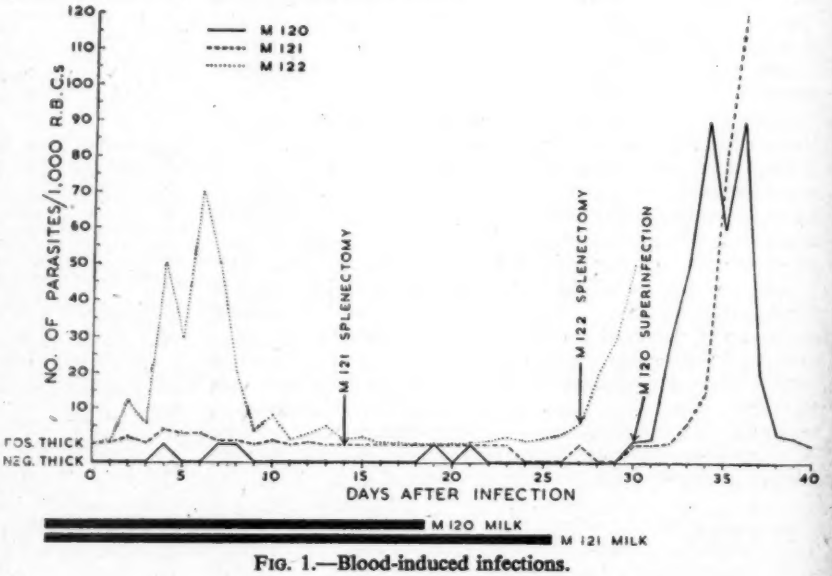

FIG. 1.—Blood-induced infections.

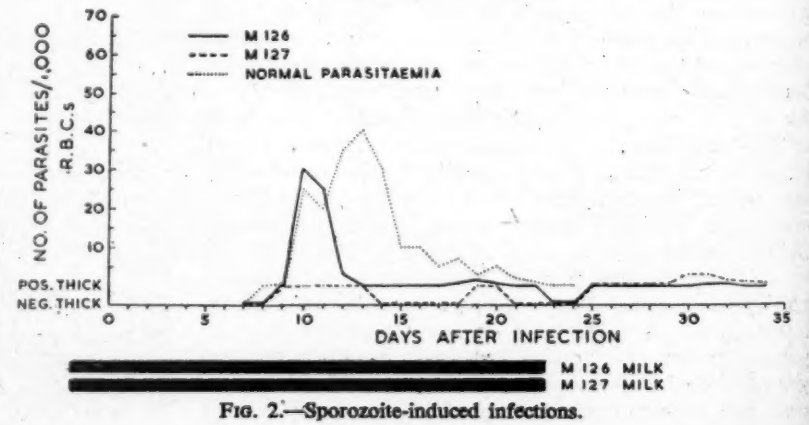

FIG. 2.—Sporozoite-induced infections.

Experiment I (see Fig. 1).—Suppression in the immature monkey M 120 was almost complete. Return to normal diet resulted in no recrudescence in M 120, but superinfection with the homologous strain resulted in a heavy parasitaemia. In the mature monkey M 121 there was a minor parasitic break-through at the time of normal primary parasitaemia, but when the suppressive effect of the milk had gained control splenectomy failed to bring about another parasitic break-through. However, return to normal diet resulted in a severe "splenectomy type" recrudescence 31 days after infection. In the mosquitoes fed on M 121, oökinetes were observed 20 hours after feeding. Oöcysts were seen on the seventh, tenth, and fourteenth days, and sporozoites were seen in large numbers in the glands on the tenth and fourteenth days. All stages appeared normal.

Experiment II (see Fig. 2).—Suppression in the mature monkey M 127 was almost complete, though the milk diet was unable to cope with the primary merozoite wave released from the pre-erythrocytic phase which resulted in a mild parasitaemia for three days. Return to normal diet caused a mild recrudescence. In the immature monkey M 126 a primary parasitic break-through of merozoites from the pre-erythrocytic phase of considerable proportions occurred over two days. This was quite rapidly brought under control by the milk diet. A mild parasitaemia was evident on the eighteenth to twentieth days after infection, which coincides with a merozoite release from the presumed secondary tissue phase. Sections of the liver of M 126 showed large numbers of pre-erythrocytic schizonts developing normally in the parenchyma. Return to normal diet resulted in a mild recrudescence. The course of a typical sporozoite-induced parasitaemia of *P. cynomolgi* is shown in Fig. 2 for comparison.

Discussion

The suppressive effect of a milk diet was observed in our four experimental monkeys. It was not unlike that recorded by Maegraith *et al.* in *P. berghei* infections in rats. In no animals was suppression complete, but (except temporarily in one instance) parasitaemia was at a low level, and all four infections were quite different from those seen in monkeys on a normal diet. Sporozoite-induced infections behaved much the same as blood-induced infections; however, in monkey 126, which had received the heavier dose of sporozoites, a break-through occurred on the tenth and eleventh days after inoculation, when the blood became flooded with young rings; the density of parasites did not then increase, but on the contrary dropped to a negligible level. The liver biopsy of this animal had revealed numerous pre-erythrocytic schizonts of normal morphology. These apparently reached maturity, ruptured, and their products entered the circulation unharmed by the "milk factor." In other words the latter acted neither on the pre-erythrocytic schizont nor on the free merozoite, and it is thought that the adverse effect must be upon the immature blood schizont—probably at the stage of active nuclear division when desoxyribonucleic acid becomes essential (Bray and Garnham, 1953)—in fact such schizonts seen on the eleventh day were smaller than normal and irregular in formation. The observation that sporogony in the mosquito followed the normal course indicated that the "milk factor" was unable to harm the gametocyte stage.

A milk diet was powerful enough to prevent a break-through after splenectomy (see monkey M 121); but within a few days of return to a normal diet a severe recrudescence took place. Superinfection with a homologous strain had the same effect once the milk diet had been stopped. With no interference (as in the sporozoite-induced infections) the infections became slightly heightened after return to a normal diet. These results suggest that little or no premunition developed during the time that the animals had been exposed to a low parasitaemia—that is, for four weeks.

Summary

Two monkeys infected with *P. cynomolgi* by blood inoculation developed a low-grade parasitaemia only while on a milk diet.

One of two monkeys infected with *P. cynomolgi* by sporozoite inoculation and also on a milk diet showed an equally slight response; the second had a rather heavier infection for two days while the pre-erythrocytic schizonts were rupturing in the liver.

Pre-erythrocytic schizonts, sporogonic stages, and merozoites all appeared to be unaffected by the milk.

The suppressive action seemed to be upon the immature schizonts in the blood, probably during active division of the nucleus.

These low-grade parasitaemias were unable to produce premunition in the host animals.

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MILK DIET, *p*-AMINOBENZOIC ACID, AND MALARIA (P. BERGHEI)

PRELIMINARY COMMUNICATION

BY

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It has been reported by Maegraith, Deegan, and Jones (1952) that infections of *Plasmodium berghei* do not develop properly in rats if the animals are maintained on a milk diet. These authors conclude that "milk contains something that can inhibit or restrict the development of the asexual phase of blood-transmitted *P. berghei* in the rat." Experiments have confirmed their finding that infections of *P. berghei* are wholly or partially suppressed if the animals are maintained on a milk diet. It seemed possible that the failure of malaria parasites to develop in these circumstances might be due to lack of something in the milk diet, a hypothesis which was also considered by the above workers. Fresh milk is known to contain very little *p*-aminobenzoic acid (P.A.B.), not more than 0.004 part per million; but this substance is much more plentiful in some of the constituents of a good laboratory diet—for example, dried yeast may contain 6–60 parts per million (Lewis, 1942). *P. knowlesi* requires P.A.B. for satisfactory growth *in vitro* (Anfinsen *et al.*, 1946). Also, most mammalian malaria parasites are sensitive to sulphonamides (which inhibit the utilization of P.A.B.); and *P. berghei* is particularly sensitive to these drugs.

Experiments were undertaken to investigate this possibility. It was found that if P.A.B. is added to the milk the infection develops with its usual virulence. This is illustrated by the extract (see Table) from the protocol of one of our experiments. The rats weighed approximately 100 g. They were placed on the diets two days before inoculation. The normal diet was the stock cube diet for this institute, containing all the requirements for the health and growth of rats. The milk was ordinary milk from a dairy. The rats were inoculated intraperitoneally with two million

Degree of Infection (Percentage of Erythrocytes Parasitized) by P. berghei in Rats Maintained on Different Diets

Day after Inoculation	Normal Diet		Milk		Milk plus P.A.B. 1/1,000	
	Rat A	B	C	D	E	F
7	1	5	0	0	4	2·5
12	6	20	0·5	0	10	8

parasitized cells each. The degree of infection is expressed as the percentage of red cells which contained parasites.

These investigations are being continued, and it has been found that P.A.B. also corrects the inadequacy of a milk diet for *P. cynomolgi* infections in monkeys. Meanwhile it is concluded that P.A.B. (or some derivative) is an essential metabolite for *P. berghei*, and that the suppressive action of a milk diet upon this infection is due to the deficiency of P.A.B. which it produces.

Grateful acknowledgments are due to Mr. K. Broomfield and Miss J. Selby for technical assistance, to Dr. A. T. Fuller and Miss J. Thurston for valuable suggestions, and to Dr. R. S. Bray and Professor P. C. C. Garnham for advance information about their work.

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A TRIAL OF GOATS' MILK IN ECZEMA IN CHILDHOOD

BY

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It is undoubted that pruritus, erythema, and urticaria may result from dietetic factors, which may thus aggravate a pre-existing eczema or perhaps determine a subsequent eczematous reaction. That diet may be responsible for a true eczema, either by allergy or by any other mechanism, is very doubtful, though claims are often made to the contrary. It was decided to carry out, during the first half of 1952, a controlled trial of the therapeutic effects of goat's milk in children with eczema, in order to test the substance of past and current reports. The report by Harris (1952) was the apparent cause of the letter in this *Journal* by Croft (1952).

Present Investigation

Nine children, unselected successive admissions to the dermatological beds in the General Infirmary at Leeds, were used. A further child was given an incomplete trial, and two more were treated as out-patients; these three children are not described further, although their behaviour tended to confirm the findings in the controlled cases. By having the patients in hospital it was possible to control their diets fully and to make a close supervision of their progress; however, it had the disadvantage that our youngest patient was aged 16 months, since infants with eczema are very rarely admitted to hospital.

Of the nine children submitted to tests, all but two had developed eczema in infancy. Their ages at the time of the trial, with ages at onset of the condition in parentheses, were: Case 1, 23 months (1 month); Case 2, 2 years ("present at birth"); Case 3, 2 years (3 weeks); Case 4, 4 years (1 month); Case 5, 5 years (2 years); Case 6, 5 years (3½ years); Case 7, 8 years (3 months); Case 8, 8 years (5 months); Case 9, 11 years ("since infancy"). All were male except Case 9. All were of the "disseminated neurodermatitis" type except Case 9, who showed seborrhoeic features; Cases 5 and 7 had considerable superimposed infection; and Case 7 also had xerodermia and asthma.

The trials consisted in the complete substitution of goats' milk for cows' milk in all items of diet, including cheese, etc., for a period of two to five weeks after an initial control period of 2 to 19 days (average one week), and then the reversion to cows' milk. Cases 4, 5, and 7 had second courses of goats' milk after reversion to cows' milk for one to two weeks. Apart from this, treatment was along usual lines for such cases—for example, Lassar's or White's tar paste externally, and mild internal sedation and removal from the home environment (though daily visiting is allowed). With the exception of Cases 2, 3, and 5, who were only scratch-tested, every patient had both scratch tests and patch tests to goats' milk and to cows' milk (including the child, aged 16 months, who received an incomplete trial).

Results.—Cases 2, 3, 5, 6, 8, and 9 showed gradual improvement, unaffected by change of milk. Case 1 had a temporary exacerbation one day *before* reversion to cows' milk, otherwise his course was one of steady amelioration. Case 4 was rather resistant to treatment, and ran a variable course, apparently unaffected by changes of milk; he had two courses of goats' milk, each lasting two weeks. Case 7 had a relapse on the seventeenth day of his first (three-weeks) course of goats' milk, followed by some improvement, and no immediate exacerbation on reversion to cows' milk; but on the ninth day of cows' milk his condition became worse for a few days. After two weeks on cows' milk he was put back on goats' milk, and the steady improvement was not halted by reversion to cows' milk two weeks later. All the scratch tests and patch tests were negative.

Comment

The chemical composition of cows' milk and goats' milk are very similar, though long usage of goats' milk in infants has been reported as causing a macrocytic anaemia, probably due to folic acid deficiency. The proportion of lact-albumin is higher and the curd tension lower in goats' milk, but it is said to be no more readily digestible than cows' milk (Jeans and Marriott, 1947). Goats' milk could have a therapeutic effect in various ways: (1) by replacing cows' milk, which may contain an allergen—Hill (1938) found that 26 of a series of 100 cases of infantile eczema gave positive scratch tests to milk; (2) by the correction of a deficiency of some trace element or factor—for example, biotin (Kiessling, 1952); or (3) via an action on the gastro-intestinal flora or the digestive processes, perhaps linking up with the work of Towle and Talbot, and White (quoted by Ormsby and Montgomery, 1947).

It was therefore decided to do a simple clinical trial, while at the same time carrying out scratch and patch tests to cows' and goats' milk. These tests were done because most of the reported successes in dietetic treatment of infantile eczema suggest an allergic basis. While scratch tests are supposed to give more positive reactions, particularly in food sensitizations, patch tests are a more reliable criterion of epidermal sensitivity (Peck and Salomon, 1933). However, there are those who declare that in neurodermatitis, as opposed to contact dermatitis, the shock organ is the blood vessel of the cutis, and not the epidermis (Urbach, 1946). Others—for example, Cooke *et al.* (1946)—say that scratch tests are valueless in eczema (allergic dermatitis). For these reasons both scratch and patch tests were done. Bencard scratch-test solutions were used; in the patch tests, lint moistened with the solution was applied for 24 hours to the unprepared skin, on areas of the back or arms as

normal as possible (these were never far from some fairly typical eczematization). Readings were taken after 24, 48, and 72 hours.

Conclusion

Under the conditions of the trial, goats' milk, as such, had no effect on the course of the eczema in nine children. None of these patients showed cutaneous hypersensitivity with scratch or patch testings to cows' or goats' milk.

We wish to thank Dr. J. T. Ingram and Dr. F. F. Hellier for their inspiration, encouragement, and permission to carry out the trial, and Miss E. M. Lupton, who generously provided the goats' milk.

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Medical Memoranda

Orchitis as a Complication of Chicken-pox

Orchitis as a complication of chicken-pox seems to be rare. Wesselhoeft and Pearson (1950), in a search of the literature, found only one case of orchitis and epididymitis arising in the course of chicken-pox, and report a case of their own.

The case (Case 1) cited by Wesselhoeft and Pearson was described by Sabrazés (1927). A man of 20, vaccinated against smallpox some months earlier, broke out in the rash of chicken-pox, chiefly on the arms and legs, on December 24, 1917. Fatigue, vague joint pains, and fever rising to 37.8° C. (100° F.) occurred. Almost from the beginning he complained of pain in the right testicle, which, along with the epididymis, became swollen to the size of a hen's egg. The left testicle and epididymis were similarly affected, and thereafter remissions and exacerbations of the pain and swelling accompanied by fever affected the testes in turn over a period of 18 days. Fluid appeared in the right scrotal sac on December 29. On January 11, 1918, the temperature finally fell to normal and the testes rapidly diminished in size and tenderness. There is no mention of their subsequent fate.

Wesselhoeft and Pearson's case (Case 2) related to a 46-year-old salesman exposed to the disease in his own home 17 days before the onset. He developed a typical rash and a virus type of pneumonia, and was severely ill. He was treated with penicillin and streptomycin and steadily improved; but nine days after the onset he felt pain in the right testicle, which became swollen and tender, with enlargement of the epididymis. His temperature rose to 102° F. (38.9° C.). The degree of orchitis was thought to be moderate, for the testis never became hard, was at no time seriously painful, and was swollen only to about double its original size. At the end of a week it had returned to normal. Six and a half months after the onset of the illness the right testicle was found to be one-third smaller and was softer and less sensitive than the left. The authors describe this as the first case of partial atrophy of the testicle ever reported as a result of orchitis complicating chicken-pox.

In view of the rarity of orchitis as a complication of chicken-pox, or at least the infrequency with which it has been reported, it seems worth while to describe the event in an English schoolboy (Case 3).

CASE REPORT

On June 23, 1950, a boy aged 7 broke out in a rash having the unmistakable characteristics of chicken-pox. The eruption was extensive. Successive crops appeared during the next few days on the trunk, and to a lesser degree on the limbs. There were spots on the scrotum, prepuce, and umbilicus, but not on the palate. Constitutional symptoms were mild to begin with, but on June 25 the patient complained of abdominal colic, and the next day became seriously ill. He vomited continuously for three hours, and severe abdominal pain was felt in the region of the umbilicus and in both iliac fossae, and generalized abdominal tenderness was maximal in the left iliac fossa. The appearance was toxic. His temperature was raised to the neighbourhood of 100° F. (37.8° C.) and the pulse to about the same figure.

On June 28 he was still extremely ill, but the abdominal pain was less severe. Constipation was absolute. The left testicle and epididymis were acutely painful and swollen to about four times the normal size. He was given 300,000 units of procaine penicillin daily and 0.5 g. of sulphadiazine every four hours.

On June 30 he was seen in consultation. He remained ill and nervous, but the psyche was clear, though he was toxic and drowsy if left alone. His temperature and pulse had returned to normal and the orchitis had begun to resolve, but the testis was still considerably enlarged. Slight tenderness and muscular defence remained only in the region of the umbilicus. He complained of severe pain in his elbows and held his arms tightly flexed. The muscles of the upper limbs were found to be spastic, and could not be straightened voluntarily or passively on account of the pain. The lower limbs were also spastic, while the neck was stiff and painful on attempted flexion. The state of the deep reflexes was difficult to determine, as the boy was very apprehensive. There was no evidence of cranial nerve involvement. The spasticity of the limbs became even more pronounced on the next two or three days, and the mother noticed facial tremors on one occasion. The neurological findings were suggestive of encephalitis. A lumbar puncture was not done, as the boy was in the care of his mother at home.

Chloramphenicol, 500 mg., was given four-hourly from June 30. This was stopped after 36 hours because of vomiting. Within 12 hours from the start of treatment there was a rapid improvement. The spasticity gradually disappeared, and the orchitis subsided in two or three days. On July 2 the appetite returned and the bowels opened naturally. The last vestiges of the rash were gone in 28 days. The patient was seen at intervals thereafter. On January 1, 1951, it was apparent that the left testicle was completely atrophied. He had been quite healthy before the onset of the illness apart from childhood ailments, including an attack of mumps at 2 years of age.

COMMENT

The salient features of the three cases are shown in the Table. It seems that orchitis as a complication of chicken-pox has no special characteristics. White blood counts in Cases 1 and 2 were not significant. The efflorescence and systemic illness were pronounced in each case. The duration of the inflammation was shortest in Case 3, whether or not chloramphenicol had anything to do with it.

Case No.	Appearance of		Testicles Involved	Duration of Inflammation	Specific Treatment	Sequel Testis
	Rash	Orchitis				
1 (French)	Day 1	Day 1 or 2	Both	18 days	Nil	Unknown
2 (American)	,, 1	Day 9	Right	7 ,,	,,	Partial atrophy
3 (English)	,, 1	,, 5	Left	5 ,,	Chloramphenicol	Complete atrophy

Orchitis is best known as a complication of mumps, though it occurs in other infectious fevers, in rheumatism, congenital syphilis, and a few other conditions. It is very

rare in mumps in young children, though in older boys its incidence runs between 5 and 15%, averages 18% after puberty (Wesselhoeft, 1940), and is bilateral in one-third of the cases (Brennemann, 1949). Most cases of epididymo-orchitis appear between the first and the eighth day of mumps, and the acute swelling subsides in four or five days. Atrophy often follows.

Morrison and Baird (1952) describe the incidence of orchitis in Bornholm disease in this country, and quote Jamieson and Prinsley (1947) as reporting it to be the commonest complication of an outbreak of the disease in Aden, and also Huss (1934) as stating that orchitis affected 50 out of 884 cases of Bornholm disease in the Swedish epidemic of 1931.

Though Sabrazés (1927) states that orchitis is a frequent complication of smallpox and vaccination, it has been rare in the limited outbreaks in this country during the past 30 years. Both this author and Wesselhoeft and Pearson refer to the work of Rivers (1926, 1927), who, using tissues from human varicella lesions, was able to produce inclusion bodies by injection into the testicles of monkeys.

I have to thank Dr. M. F. Hope, of Andover, for giving me access to his excellent notes on this case.

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Friedländer's Bacillus Meningitis, with Recovery

Meningitis due to Friedländer's bacillus (*Klebsiella pneumoniae*) is comparatively rare. Until the advent of the sulphonamides recovery was seldom reported (Hyde and Hyde, 1948). With combined sulphonamides and antibiotics more recoveries have occurred, but the mortality is still very high (Sadusk *et al.*, 1949). It was felt, therefore, that it would be of interest to report a case with a successful outcome.

CASE REPORT

The patient a 5 year-old girl, whose birth and development had been normal, had had no serious illnesses. She was admitted to hospital on December 28, 1949, with the history that two weeks previously she had developed a "cold in the head," with nasal catarrh. Eight days later she complained of pain in the left ear, and the next day she lost her appetite and became lethargic. She then became feverish and fretful; she vomited and was delirious at times, but on the day before admission she improved a little.

On admission she was quiet and rather drowsy, but co-operative. Her temperature was 100° F. (37.8° C.), pulse 96, and respirations 24. Her respiratory and cardiovascular systems were normal. The fauces were diffusely injected, and examination of the left ear showed that the tympanic membrane was red and bulging. The right ear was normal. There were palpable non-tender glands in the left posterior triangle of the neck. The liver edge was palpable below the costal margin and the bladder was distended to 2 in. (5 cm.) above the symphysis pubis. Neck rigidity was marked and Kernig's sign moderately positive. There were no other abnormal signs in the central nervous system, all reflexes being normal and equal and the plantar responses flexor. Examination of the urine showed no abnormality.

A clinical diagnosis of left otitis media with a complicating pyogenic meningitis was made. Lumbar puncture revealed a hazy cerebrospinal fluid under increased pressure; 5,000 units of penicillin was at once injected intrathecally. A left myringotomy was performed immediately after the lumbar puncture and only a small bead of yellow pus was found: unfortunately, no swab of the pus was obtained for culture.

Examination of the cerebrospinal fluid showed that there were 528 cells per c.mm., almost all polymorphs, and in the film large numbers of encapsulated Gram-negative bacilli were seen. The protein was 40 mg., sugar 50 mg., and chlorides 705 mg. per 100 ml. A blood count showed: haemoglobin, 69% (10.35 g.%); white cells 4,200 per c.mm. (polymorphs 68%, lymphocytes 24%, monocytes 6%, eosinophils 2%). While awaiting information on the identity of the organism treatment was begun with sulphadiazine orally, 1 g. as a loading dose, then 0.5 g. every three hours, and penicillin 100,000 units intramuscularly every three hours.

On the following day the cerebrospinal fluid pressure was 170 mm., the fluid was still hazy, and occasional Gram-negative bacilli were still present in the stained films. A preliminary report was then received from the laboratory stating that the organism was probably Friedländer's bacillus, and so streptomycin was given, intrathecally 70 mg. daily, and intramuscularly 700 mg. daily, in divided doses. The intramuscular penicillin was also continued. The culture of the cerebrospinal fluid remained positive on the second and third days after admission, but only occasional organisms were seen in the stained films on the third day; on the fourth day and subsequently no organisms were seen in the smear and the cultures were sterile. By the fourth day bacteriological examination confirmed that the organism was Friedländer's bacillus, which was sensitive to sulphadiazine at a concentration of 2.5 mg. per ml., to penicillin at a concentration of 1 unit per ml., and to streptomycin at a concentration of 10 units per ml. Because of this comparative lack of sensitivity to streptomycin it was decided to continue treatment with sulphadiazine and penicillin alone, and thereafter penicillin was also given intrathecally in doses of 20,000 units once daily.

By the fifth day the child's general condition had improved and the pyrexia was settling. The incision in the left tympanic membrane closed within 24 hours and the ear remained dry subsequently. Neck stiffness disappeared on the sixth day, and at that time and afterwards no abnormal physical signs could be detected. Treatment was continued for a week after the C.S.F. culture had become sterile.

Convalescence was complicated only by a mild upper respiratory infection, and the patient was discharged on January 27, 1950, after 30 days in hospital. She then felt quite well, was mentally normal, and there were no abnormal physical signs; the cerebrospinal fluid was normal and under normal pressure. One month later she was found to be quite well.

COMMENT

The patient never seemed to be severely ill, and the fact that the cerebrospinal fluid sugar content was not decreased, the chlorides were within normal limits, and the protein was only slightly raised suggested a mild infection. However, this was not borne out by the presence of large numbers of organisms seen in the first stained film and the finding of positive C.S.F. cultures for the first three days. Because of the latter findings, and owing to the uncertain response of Friedländer's bacillus to antibiotics, it was decided to use available therapeutic agents in high dosage and to continue treatment for at least a week after the organisms had disappeared from the cerebrospinal fluid. This programme seems to have been justified by the excellent result. Although it cannot be claimed that sulphadiazine and penicillin alone effected the cure, because streptomycin was given for two days near the beginning of treatment, it is highly probable that they were the effective therapeutic agents.

I should like to thank Dr. R. H. Dobbs, under whose care this patient was admitted, for permission to publish this report and for his advice in its preparation.

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Reviews

FUNCTIONAL ENDOCRINOLOGY

Functional Endocrinology: From Birth Through Adolescence. By N. B. Talbot, M.D., E. H. Sobel, M.D., J. W. McArthur, M.D., and J. D. Crawford, M.D. (Pp. 638; illustrated. 63s.) Cambridge, Mass.: Harvard University Press. London: Geoffrey Cumberlege. 1952.

The authors of this excellent book approach endocrinology by way of the development of the child and adolescent to full maturity. They are concerned with the significance of endocrine function in health and development as well as in disease, an approach which has interested the reviewer for more than a decade. Exceptionally well qualified for their task, three of the authors are paediatricians at Harvard University and the fourth is a gynaecologist. The holistic plan of the study has been slightly disturbed by the decision to examine each endocrine gland separately and systematically, but this presentation ensures for the reader a systematic study of all the endocrinopathies, as well as of normal function, and physiological and biochemical fundamentals.

As to more detailed aspects, it is disconcerting to find that blood cholesterol in children has a normal range of 110 to 280 mg. per 100 ml., and may vary by 80 mg. from day to day. Hypercarotinaemia is recorded as a frequent finding in hypothyroidism owing to the associated disturbance of liver function. The serum alkaline phosphatase is twice as high in normal children as in adults, but it is low in hypothyroidism and increases with thyroid therapy. In one case of cretinism with obvious goitre at the age of 7, the radio-iodine uptake was normal, and inability to convert iodine to thyroxine was postulated. Whereas the differential diagnosis of cretinism and mongolism is often a didactic exercise, the coexistence of hypothyroidism and mongolism is clearly indicated in this section as a clinical entity. A somewhat optimistic view is taken of the ability of thyroideum siccum to involute or inhibit adolescent goitre in a large percentage of cases. The recurrence of large symptomless goitre after thyroidectomy in children may also present a therapeutic puzzle.

The section on the parathyroids is excellent, and the potential primary and secondary roles of the kidneys ably discussed from the biochemical approach. A similar approach to the electrolytes in hyperadrenocorticalism brings out the fallacy of assuming that blood values necessarily reflect the intracellular or tissue concentrations. A.C.T.H. tests for adrenal cortical function are fully described. The Na–K saliva ratio is not often used in Britain, but it is apparently a reliable and significant index. The Waterhouse–Friderichsen syndrome is referred to as a rare clinical entity of importance to the clinician. Adrenal insufficiency due to primary renal loss of salt is also a rare entity that is worth bearing in mind. The use of cortisone in adrenal insufficiency receives too brief and scanty attention, but this will no doubt be remedied in the next edition. The authors record pseudo-sexual precocity in a boy with partial Cushing's syndrome due to adrenocortical carcinoma; and another form of pseudo-sexual precocity in a male, due to congenital adrenal androgenic hyperplasia, was associated with excessive salt loss and testes enlarged by adrenal rests—a diagnostic stumbling block. Of eight children with phaeochromocytoma, four died during or immediately after operation, which is a high proportion.

The chapters on the gonads are more closely concerned with normal evolution and bioassays. Urinary oestrogens are present in small amounts in boys and girls from birth, but at the age of 8, or a year or so later, there is a sharp rise only in girls in the urinary oestrogens and a further spurt at 11, though the age correlation varies in different individuals. The cytology of urinary sediment is useful as an indication of oestrogenic stimulation in children. Fröhlich's syndrome is correctly described as very rare; and adipose gynism and gynandrism have not yet found their way into systematic clinical classification. The effects of "chronic infections, debilitating diseases, and nutritional disturbances" are considered in a small paragraph, and I missed any discussion of idiopathic hirsutism in childhood—a puzzling entity, worthy of persistent study. The authors show an excellent picture of a case identical with the Jonathan Hutchinson and Hastings Gilford's progeria cases, and in this case a remarkable muscular and somatic anabolic effect of testosterone. They describe pseudo-eunuchoidism as a failure of certain end-organs, such as the larynx and facial hair follicles, to respond to normal concentrations of endogenous androgens. The varieties of gynaecomastia in adolescents, including that of the complex Klinefelter syndrome, receive adequate analysis. The anterior and posterior pituitary is considered in illuminating fashion, and the book ends with the protein manifestations of hyperinsulinism.

In spite of much information on the normal and on biological assays, it seems that the authors' initial predilections for the modern hormone study of normal evolution have been swung over to the more conventional clinico-pathological approach by the wealth of material coming under their observation and investigation. This may be more of an asset than a defect for "the practitioners, students, and investigators of medicine and surgery who seek practical information"; and, although there is still a place for a book using the grossly pathological to illustrate the normal and its indefinite transitions into the borderline, this is an important paediatric endocrinological study packed with fascinating clinical and biological material.

S. LEONARD SIMPSON.

PAEDIATRICS IN GENERAL PRACTICE

Pediatrics in General Practice. By Professor James G. Hughes, M.D. (Pp. 735; 178 figures. £5 19s.) New York and London: McGraw-Hill Book Company. 1952.

Professor Hughes, of Tennessee, has written two-thirds of a fine textbook of paediatrics. In it he tells his readers nothing of the growth and development of the child, so that the family doctor who seeks information about his patients' "milestones," their height, or their weight will not find it here. He has written nothing of endocrine and metabolic disorders and little of organic nervous disease. The book is particularly strong in its discussion of fluid and electrolyte balance, of congenital cardiac disorders, of blood diseases, and of the behaviour disorders of childhood. There is an unusually good selection of psychological case histories which illustrate the common deviations in the emotional life of children. All this is of great value, but there is little evidence that these passages are better done than in the standard textbooks of paediatrics. Moreover, the price of this book in England is greater than that of its rivals.

Authors who undertake to write a book for general practitioners might be expected to ask, before they isolate themselves for some years from their devoted families, why their projected masterpiece is likely to be more attractive to the family doctor than the available textbooks. A reasonable, though not necessarily a correct, answer might be that the book to appeal to the family doctor should be both cheaper and smaller than the standard textbooks. It is when the decision has to be made on what should be omitted that the difficulty begins, but few would be found to agree with our author that the subject of growth and development of the child might be suitably omitted from a family doctor's textbook of paediatrics. If, on the other hand, one decides, as Hughes does, that the family doctor requires long descriptions of the Lutembacher syndrome and of the megaloblastic anaemia of infancy (and why shouldn't he?), then plainly we can omit nothing that is included in the standard textbooks. We look forward to a second edition of this book in which Professor Hughes does not solve the problem of providing an adequate meal for general practitioners by omitting essential courses.

D. V. HUBBLE.

CARDIAC THERAPY

Cardiac Therapy. By Harold J. Stewart, M.D. (Pp. 622; 68 figures. £3 15s.) London: Cassell and Co. 1953.

This book contains a great deal more than the title implies. Oddly enough, examinations are still held in therapeutics, yet it would be equally sensible to hold them in diagnostics or prognostics. This sensible book does not attempt to divide up thus artificially the art of medicine. In addition to treatment there is a vast amount of sound clinical medicine. Even those diseases and disorders which cannot be treated at all receive full consideration. The writing is full and clear. Practical details are always included, and disadvantages as much as advantages are always discussed. Sometimes the reader has the benefit of the results of the investigations carried out by the author, as in Pick's disease. One may note that digitalis is preferred to quinidine for paroxysmal tachycardia. Perhaps more might be said about venesection, abdominal paracentesis, and puncture of the legs. Nowadays resort to these procedures is less frequent than formerly, but when they are needed they are needed badly. It is to be regretted that the author is rather fond of that vague, misused word "compensation." Case reports are a little too long, as are some of the captions to figures. Some diagrams and charts are very complicated; they should catch the eye at once or they do not earn their space. There are not many cardiograms, but they are good, and one would welcome more in some sections.

Perhaps one of the best chapters is the one on what to tell the patient. Another good chapter deals with electrolytes. There are full diet sheets. The paper and print are first class. The bibliographies at the end of each chapter are full and fairly up to date. One cannot grumble if 1950 is usually the latest date, when one recollects how long is the gap from pen to paper. This book is thoroughly to be recommended as sound, human, and intelligible.

TERENCE EAST.

PRACTICAL BLOOD GROUPING

Practical Blood Grouping Methods: A Manual of Immunohematology. By Robert L. Wall, M.D. American Lecture Series. (Pp. 175. £1 16s.) Springfield, Illinois: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1953.

Blood grouping, blood transfusion, and the investigation of sera for the presence of "blood group antibodies" are now routine procedures in almost all hospital laboratories. Those who are not engaged exclusively in this type of work, but do it as a small part of their work in a general laboratory, are apt to be confused by the multitude of methods advocated for any single investigation, and sometimes lose sight altogether of the theory on which the tests themselves are based. In spite of its claim to be "especially helpful to specialists" Dr. Wall's book is really better suited to these part-time blood groupers, "pathologists, blood transfusion workers . . . and hospital staff," who will find in it useful practical details not given in more advanced works on the subject. It is interesting to note that throughout the book the author, an American, uses the Fisher nomenclature, which is in general use in British laboratories, and gives an account of Wiener's theory and terminology only in an appendix.

Dr. Wall describes briefly the theory behind each type of investigation and gives one method for each in great detail (including a helpful list of sources of error) and a shorter account of alternative methods. It is apparent that he himself has had much practical experience at the laboratory bench, and so is to be commended for not claiming that his own favourite method is the nonpareil. In general, the recommended methods will be regarded as orthodox in most British laboratories. However, in this country, where serum donors are unpaid, and where artificial immunization of volunteers is not widely practised, the use of 0.2 ml. volumes for grouping must be regarded as unwarrantably extravagant.

The approach to the subject of grouping is both lucid and simple. It is a pity, then, that carelessness over detail in describing "other methods," and the author's tendency to contradict himself, mar the finish of the work as a whole. For example, the need to wash cells before grouping by Chown's method, and the need to wash the sensitized cells in the blocking test before adding the saline antibody, are not mentioned—small points, but they cannot be omitted from a step-by-step description of a method. In addition, when discussing the tube method of grouping with albumin agglutinating anti-D serum (p. 63), the author makes the surprising statement that "it is rapid as no incubation is necessary," but at step 4 of the technique (p. 64) the worker is told to "incubate at 37° C. for 45 minutes."

The chapter on cross-matching is hardly adequate, the author making too little attempt to balance, or even list, the many (often conflicting) factors which must be considered when selecting blood for transfusion and testing for compatibility. He does not discuss the incompatible transfusion, but one notes with pleasure a chapter on differential agglutination tests—a subject which should be indispensable to any book on blood transfusion. Brief sections on autoantibodies, "haemolytic anaemia antibodies," and the chemistry of blood group substances broaden the scope of the book, though the last-mentioned section is very superficial. On the whole, however, Dr. Wall preserves a good sense of proportion; in particular his reiterated comments on such subjects as accurate labelling will find an echo in the hearts of many pathologists.

DOROTHY M. PARKIN.

GERMAN-ENGLISH DICTIONARY

German-English Medical Dictionary. By Professor Louis De Vries. (Pp. 586. £5 2s.) New York and London: McGraw-Hill Publishing Company. 1952.

Dr. De Vries has been professor of modern languages at Iowa State University for thirty years, and has helped many science students with their German reading. This book, compiled with the help of sixteen medical collaborators, gives the English for 40,000 German medical terms. The equivalents consist mainly of one or two words, of the kind many people write down when making their own word lists. The gender of all nouns is given, and verbs have "to" before the English translation; only adjectives and adverbs are not marked.

Many medical terms of classical origin are almost the same in both languages; anyone can see the meaning of such words as *Allergie, Apoplexie, Bazillus, Elektrizität, Katgut, Libido,* and *Protoplasma.* If the book was meant to help Americans to translate from English into German, it would of course be necessary to give the German forms. But its object is to help them to read German; hence the inclusion of a multitude of words like those mentioned above swells the book needlessly. The oedema is increased by innumerable verbs ending in *-ieren*—for example, *adaptieren, charakterisieren, demarkieren, existieren, gasieren,* and *konservieren*—which need no translation. *Studieren* and a few others are completely naturalized in German and are the accepted words for what they mean; the rest are undesirable aliens avoided by good writers. Normal German for "to adapt" is not *adaptieren* but *anpassen*; for "to preserve" it is not *konservieren* but *erhalten.* Excision of all words whose meaning is obvious would greatly reduce the bulk and cost of the book without impairing its usefulness.

To read medical German competently, the student needs a sound knowledge of the grammar and a good non-technical vocabulary. A German textbook of his subject will teach him all the technical terms he needs, and spare him the trouble of using a dictionary. The meaning of an unfamiliar word can often be found by triangulation from known words; the context will give the sense with much greater precision than any dictionary, for it is the sentence, not the word, that is the unit of meaning. More tricky than word-decoding is the decision whether a proposition is being affirmed or denied; when the student is equal to this, he can proceed to the higher exercise of detecting misprints in German, starting with three easy ones on p. 586.

RAYMOND WHITEHEAD.

HER MAJESTY THE QUEEN

PATRON OF THE BRITISH MEDICAL ASSOCIATION

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THE QUEEN

With all her loyal subjects the doctors of Britain pay homage to their Queen at this supreme moment of her coronation at the heart of the British Commonwealth of Nations in the Abbey of Saint Peter. Like the Tudor Queen Elizabeth, she has come to the throne in a time of trouble and anxiety. But never in our history has a Queen ascended the throne so secure in the affections of her subjects. The conception of monarchy and the function of the monarch have changed much since the daughter of Henry VIII and Anne Boleyn became Queen of England in 1558. Yet republicanism has never found a ready response in the British character and temperament. The Crown has become a symbol of steadfastness and stability, a force that keeps Britons united in the presence of jarring sects and conflicting opinions, a focus of allegiance and loyalty for peoples of diverse origins and beliefs. In these days when various "ideologies" spread their ugly mantles over bewildered populations the crown shields us within its beneficent circle, securing those who look up to it against the disintegrating forces at work in so many parts of the world. The smallest village now vies with the largest city in paying homage to our Queen with pageantry and bunting, and a gaiety that shows that England has not forgotten her appellation of merry. And beneath all those emotions which cluster round the conception of monarchy there is a deep affection for the person of the Queen as a young mother who in her family life represents something we like to think of as the enduring stuff in the British way of life.

The British Medical Association in particular greets Her Majesty at this time as its Royal Patron, and recalls with pride the day when her grandfather, King George V, opened B.M.A. House as its new headquarters in 1925. The Association has its members in all parts of the Commonwealth, and they will join with us at home in the acclamation that will be heard at the Abbey on June 2—"Vivat regina!"

THEN AND NOW

In the opening pages of this issue three learned members of our profession take us back into the past on a visit that can be enjoyed for its own sake as well as affording us a basis of comparison between now and the time when the Tudors flowered into the genius of Good Queen Bess. The physician, Sir Arthur MacNalty reminds us, was just ceasing to be an ecclesiastic; the surgeon was beginning to become uneasy about his association with the art of the barber; the apothecary was not unaware of the value of his links with the prosperous grocers and was casting jealous eyes on the prerogatives of the physician. When Elizabeth came to the throne in 1558 the Royal College of Physicians of London had been founded by her father forty years earlier. Thomas Linacre, Henry VIII's physician and the sponsor of this event, was humanist and scholar first and foremost, having graduated in medicine at Padua after a residence there for only a few months.[1] To decry the value of the scholar-physician in general and of Linacre as one of the great exemplars is a periodic fashion. Yet to-day we find dismay in the world of medical educationists about the lack of cultural background in the modern student. Linacre brought a wise and humane mind to the exact study of ancient texts, mangled in their transmission to the West by Arabian commentators. It was in the exactness of his studies that he set an example to his contemporaries, an example to be followed whether learning is to be pursued by the mind alone or by the mind conjoined with the hand. Medicine has indeed languished in long periods of sterile disputation for lack of manual application, for contempt of learning by doing. The humanists of Linacre's time may have been accessory to this fact, and it is sad to recall that Dr. John Geynes was had up before the College of Physicians in 1559 for daring to challenge the infallibility of Galen—the man who himself had scornfully referred to "those who are enslaved to their sects . . . but they will not even stop to learn." Queen Elizabeth later wisely gave the College of Physicians permission in 1565 to take the bodies of malefactors for dissection. And Vesalius had cocked a magnificent snook at Galen in his *De humani corporis fabrica* in 1543. It was in Italy, too, that John Caius sought his medical inspiration, and there lodged with Vesalius. The scholar-physician met the man who used his hands to find out the structure of the

[1] The Harveian Oration on *Medicine in the Century before Harvey*, October 18, 1922. Arnold Chaplin, M.D., F.R.C.P.

[2] *The Historical Relations of Medicine and Surgery*. London: Macmillan and Co., Ltd. 1905.

human body. Just over 400 years ago John Caius described the "sweatynge sicknesse," and he lectured on anatomy before the Barber-Surgeons. John Caius made England more anatomically minded than before, and Clifford Allbutt, in a footnote to one of his charming scholar-physician's books,[2] tells us that Harvey "pretty surely attended the dissections of Dr. Grimstone in Caius College." And we can as surely claim William Harvey as an Elizabethan, for his formative years were lived in her reign, he being 25 years old at the time of her death. Like Linacre before him, he took his medical degree at Padua. Like Linacre, he was a king's physician—to James I and Charles II. Like Linacre and Caius, he was President of the Royal College of Physicians. The tradition of scholarship Linacre established was not sterile, nor was there a narrow nationalism in his outlook or in that of his successors; and Clifford Allbutt's judgment seems a little harsh in his phrase[2]: "The great Elizabethan glory shed little of its light upon our profession."

What Linacre did for the physicians Thomas Vicary did for the surgeons, and it was because of his energy that the surgeons and the barbers became conjoined in the Barber-Surgeons' Company in 1540: Vicary was serjeant-surgeon to four monarchs, the last of them Queen Elizabeth. Contemporary with Vicary was the foreigner Geminus, who seems to have become a naturalized Englishman, because it was as such that Vesalius referred to him contemptuously as a plagiarizer of his work. Of the two title-pages of Geminus's book on anatomy which Dr. Underwood reproduces in his article the second contains an early if unflattering portrait of Queen Elizabeth, a tribute no doubt to her interest in the work of the medical profession.

The Kings and Queens of 400 years ago shared the layman's curiosity in the mysteries of the human body, but few went so deep as King James IV of Scotland, linked with our theme through his marriage with Margaret Tudor, daughter of King Henry VII. Dr. Guthrie tells us that James IV paid his patients to allow him to draw teeth and let blood: "To Kynnard the barbour for two teith drawn furth of his hed be the King, 14s." But the spirit of inquiry has surely never been pursued in such a curious fashion as when James IV isolated two children with a deaf-and-dumb nurse to discover what language they might spontaneously speak.

The old tales are always worth telling again, and some of them are set down in this number of the *Journal* commemorating the coronation of Queen Elizabeth, the daughter of King George VI. They remind us of our old traditions, of the continuity of our history, of old claims and counter-claims. If we to-day boast of our technical prowess and scientific achievements we can at the same time look back with pride at the robust spirits and hardy minds of our ancestors in medicine, and look forward to a modern Elizabethan age in which once again physician, surgeon, and apothecary shall in closer harmony together advance the art and science of medicine for the thing in itself and for the benefit of the coming Elizabethan generations.

POLIOMYELITIS IN COPENHAGEN

During 1952 there was a severe epidemic of poliomyelitis in Denmark, and a single fever hospital in Copenhagen, which serves the whole city, admitted 2,722 patients with a diagnosis of poliomyelitis, of whom 866 were paralytic.[1] There was a high proportion of severe cases, both spinal and bulbar, so much so that in over 300 patients special measures were required to maintain respiration. There was at first only one tank respirator available, while as many as 70 patients at one time might be requiring artificial respiration. The measures adopted by Professor Lassen to deal with this emergency were truly remarkable. In co-operation with his anaesthetist colleagues he devised a method of treatment which both prevented inhalations of secretions from a paralysed pharynx and, if necessary, provided artificial respiration by positive pressure through the trachea. The first step was to do a high tracheotomy with the insertion of a rubber cuff tube which when inflated seals the trachea from the pharynx and thus prevents inhalation of secretion or vomit. The secretions in the bronchial tree were then removed by suction, bronchoscopy, or posture; and positive pressure breathing was maintained when indicated, as is done in certain forms of anaesthesia. For this purpose relays of students took turns in squeezing a rubber bag at a suitable pressure and rate. A closed system was used, and the positive pressure applied was 20–30 cm. of water. The mortality rate among patients treated by this method was about 40%, which was a substantial improvement on the previous experience of this type of case in Copenhagen.

It is difficult to assess accurately the importance of this Copenhagen experience in relation to what might be required in this country in similar circum-

[1] Lassen, H. C. A., *Lancet*, 1953, **1**, 37.

stances, and the problems presented were recently discussed at a meeting called by the Ministry of Health, as reported on page 1216. Plans for dealing with epidemics should be clear cut, and hospitals should ensure that enough nurses and doctors are given instruction in methods of treatment. Special apparatus is useless without trained staff to use it. Professor Lassen had some hundreds of trained nurses available, and 200 medical students were employed daily in eight-hour shifts.

At a meeting of the Section of Epidemiology and Preventive Medicine at the Royal Society of Medicine recently Dr. W. Ritchie Russell emphasized the necessity of distinguishing respiratory embarrassment due to paralysis of the pharynx from true paralysis of respiratory muscles, since the former often requires only postural drainage in the prone position, while the latter always requires artificial respiration of some kind. The skilled use of a tank respirator provides both the most efficient and the most gentle (to the lung alveoli) form of artificial respiration. However, when severe paralysis, both of swallowing and of respiration, occur together, the practical difficulties of treatment are formidable, and Professor Lassen's method in skilled hands may prove to be the method of choice at least until the paralysis of swallowing recovers. The use of the respirator with the patient in the prone position is another method which succeeds in some of these difficult cases, while some American clinics favour the performance of a tracheotomy on respirator patients who develop paralysis of swallowing. One disadvantage of Professor Lassen's method is that the patient cannot speak, and the ethical and psychological drawbacks to rendering a seriously ill and perhaps dying patient speechless are disturbing. Further, in those cases in which the chief disability is paralysis of muscles of respiration, there may be great difficulty later in removing the tracheotomy tube. Professor Lassen's more chronic patients have developed a staphylococcal infection of their bronchial tree and require frequent aspiration with a sucker. In such circumstances removal of the tracheotomy tube will be very difficult when the patient's coughing muscles are paralysed.

Poliomyelitis is a difficult disease to treat, but Copenhagen's remarkable experience has indicated as never before the need for planning the best way of dealing efficiently not only with severe epidemics but also with sporadic cases. The latter often appear unexpectedly in a hospital which may be understaffed and inadequately equipped to meet emergencies which can develop with alarming speed.

ROYAL SOCIETY CONVERSAZIONE

"Danger: High Voltage," was the attractive warning displayed over the first of the exhibits at the Royal Society's Conversazione last week. And visitors were immediately plunged into a world whose relation to everyday experience has puzzled even professional philosophers. But, whatever the philosophical implications of scientific observation and inference, the Royal Society succeeded once again in dazzling its guests with a show of apparatus and living creatures illustrating the growing points of science. Professor J. Z. Young and colleagues from University College, London, showed a flying-spot microscope counting minute particles. The field of view in the microscope is scanned by a pair of television beams, one above the other. They are connected to a pair of photocells, and output from these is recorded only when the lower beam is off a particle. Such particles as blood cells and bacteria can thus be automatically counted by interruption of the beam. Dr. H. G. Pereira and Miss D. M. Chaproniere, of the Common Cold Research Unit, showed viruses—but not of the common cold—being cultured by the roller-tube method. This consists in getting chick embryo cells to grow in a nutrient medium on the side of a test-tube, and in the U.S.A. has been playing an important part in the development of vaccines against poliomyelitis. A haemagglutinin method of titrating influenza virus was exhibited by Dr. Forrest Fulton, of the London School of Hygiene and Tropical Medicine.

The two fluids in which we have our existence—air and water—are apt to be contaminated, but only rather sparsely, with living pathogens. In order to estimate their small density quickly, large quantities of the fluid concerned must be filtered in some way, and two exhibits showed what is being done here. The Metropolitan Water Board displayed apparatus for concentrating bacteria from large volumes of water with the aid of special membrane filters. The bacteria can be grown directly on a general or selective medium, and it is possible to obtain direct *Bact. coli* counts in 24 hours. The capture of aerial pathogens—in this case fungus spores—was demonstrated by Mr. J. M. Hirst, of Rothamsted Experimental Station. A special suction trap is used which provides a much better sample of the spore population than did previous types. On the whole, agricultural experimentalists run in even greater terror of the statistician than do doctors. And research workers of the Shell Petroleum Company showed apparatus for measuring the amount of insecticide that actually covers the leaves or stems of a crop: the main purpose of the apparatus was to do the job so quickly that large samples can readily be taken for the delight of the statisticians. As every housewife knows, refrigeration has solved the problem of preserving meat, but the problem sometimes presented to biologists is how to preserve living cells such as blood cells for transfusion or bull spermatozoa for artificial insemination. Dr. A. S. Parkes and colleagues, from the National Institute for Medical Research, and Drs. P. L. Mollison and

H. Chaplin, jun., from the Postgraduate Medical School, were showing how glycerol-containing diluents protected such cells from the destructive effects of freezing and thawing, so that they can be kept at low temperatures for long periods with little loss.

The visitor, at last bewildered by the ingenuity of his hosts, found himself in the end beside an exhibit of a dozen or so starfish and sea urchins, each in a white dish containing a little water. Gathered from the seas around Plymouth by the Marine Biological Association of the United Kingdom, their brightly coloured limbs and cilia occasionally gave some sign of life. These animals apparently demonstrated nothing but their brilliant selves—unless it was the evolutionary success of their race, an example to man's erratic career. For these forms have survived from eras long before man appeared and may well far outlast him. Even so, man has his compensations: starfish have not yet held a conversazione in their watery abode and exhibited Fellows of the Royal Society there.

MILK AND MALARIA

At the end of last year Maegraith, Deegan, and Jones[1] published in this *Journal* work showing that rats fed on a milk diet become resistant to infection with the rat malarial parasite, *Plasmodium berghei*. The observation has aroused widespread interest and speculation about the mechanism responsible for the observed effect. It was not clear whether this was brought about by substances in the milk or as a result of milk being deficient in nutrients required by the malaria parasites. It is known, for example, that blood group and related polysaccharides present in milk are able to exert a powerful influence on growth of certain bacteria and viruses. In this issue we publish useful contributions to knowledge of the subject from Dr. F. Hawking (p. 1201) and from Professor P. C. C. Garnham and Mr. R. S. Bray (p. 1200). The latter workers found that a milk diet had a suppressive effect on *P. cynomolgi* infections in monkeys similar in many ways to the effect observed by Maegraith and his colleagues on *P. berghei* infections in rats. Milk contains little *p*-aminobenzoic acid (P.A.B.), and Hawking shows that when this is added to the milk diet given to the rats their resistance to malarial infection is lost. This observation is of great intrinsic interest, but it is perhaps premature to conclude that P.A.B. or one of its derivatives "is an essential metabolite for *P. berghei*." It does not necessarily follow that a substance is metabolized by parasites because it facilitates their growth when administered to the animal harbouring the parasites, though probably P.A.B. does play a part in some enzyme system in which the parasite is involved.

It is almost certainly safe to say that milk diets will never be of value in the treatment of malaria in man, but the importance of this work lies in the fact that it has made it possible to study nutritional requirements of malaria parasites within their animal hosts. Professor Maegraith and his colleagues have sown seeds from which healthy shoots are now appearing—the harvest may well be heavy.

[1] *British Medical Journal*, 1952, **2**, 1382.

EXPERIMENTAL NEUROSES

The possible contribution of animal behaviour studies to psychiatry has attracted widespread interest in recent years. At the conference of the Mental Health Research Fund held last year in Oxford a whole session was devoted to this topic, and a transcript of the proceedings is now available.[1] The discussion ranged over two main fields of inquiry. The first was the study of innate behaviour patterns in lower animals, the results of which have been well drawn together by Tinbergen in a recent book.[2] The second was the study of experimentally induced behaviour disorders in mammals of the kind first observed by Pavlov and called by him (perhaps not altogether correctly) experimental neuroses. The first line of work was introduced by Dr. J. Bowlby, the second by Professor R. W. Russell. Neurologists, psychologists, and psychiatrists participated in the discussion, but unfortunately no zoologists were present.

As regards the contribution of ethology—the study of behaviour—it is plain that several contributors, in particular Dr. Bowlby himself, believe it to have real significance for psychopathological theory. Certainly it cannot be doubted that fascinating and instructive analogies can be drawn between such phenomena as "displacement activities" in birds and various types of "substitute activity" in human beings. Indeed, Dr. Bowlby suggests that the work of the ethologists, and in particular new conceptions of instinct to which it has given rise, has already gone far to fulfil Freud's prophecy that psycho-analytical theory will one day be placed on its organic foundations. At the same time, a note of caution must be sounded. As Professor Russell has remarked, not all similar behaviour patterns are homologous, and the ethologists are themselves doubtful whether concepts derived from study of the lower vertebrates can properly be applied to the behaviour of mammals, let alone man. Further, the theories of the ethologists are decidedly controversial, and little, if any, direct neurophysiological evidence has yet been adduced in their support. None the less, the stimulus of comparative study is welcome, and any attempt to place psychological theory on a broader biological basis is worthy of warm commendation.

The relevance of studies of experimental neuroses to problems of human breakdown is not altogether easy to assess. Disorganization of behaviour, as Professor Russell points out, is regularly found in animal experiments in which "two or more incompatible innate or learned responses are elicited simultaneously." The experimental settings which have been used in such studies are very various, ranging from strict Pavlovian conditioning techniques to situations, such as those

[1] Tanner, J. M. (ed.), *Prospects in Psychiatric Research*. Oxford: Blackwell. 1953.
[2] *The Study of Instinct*. Oxford: Clarendon Press. 1951.
[3] *Behavior and Neurosis*. University of Chicago Press. 1943.
[4] *Psychosom. Med.*, 1947, **9**, 3.

introduced by Masserman,[3] which were obviously inspired by the analogy with human motivational conflict. Even so the patterns of breakdown observed are relatively uniform, often long-lasting, and present many analogies with neurotic (and even psychotic) syndromes in man. In Professor Russell's opinion, the advantage of these various techniques is that they permit quantitative studies of the aetiology and characteristics of behaviour disorder—studies, for example, of genetics and susceptibility to breakdown. While not suggesting that animal experiment is in any sense a substitute for all other approaches, Professor Russell considers that it has a real contribution to make to our understanding of human psychiatric disorder.

Hebb[4] has pointed out that doubt exists whether experimental neuroses are genuinely homologous either with neurotic illness in man or with the behaviour disorders which sometimes appear spontaneously in captive animals. If he is right, then any attempt to explain human neurosis in terms of the artificial conditions of the animal laboratory must be viewed with some caution. Further, it has been suggested that the animal experiments have so far provided only such data as could have been predicted on the basis of principles already established in human psychopathology. But these objections by no means invalidate the work already done or detract from the promise of its methods in further research. If the study of experimentally induced behaviour disorders can be developed along the well-planned lines envisaged by Professor Russell, the outcome can hardly fail to illuminate many vital, if murky, recesses of psychological medicine.

ACCIDENTS IN THE HOME

As natural death has in the last half-century become more easily averted, so accidental death has come into prominence. Young children and old people are the chief victims of accidents in the home, which now constitute indeed one of the main causes of children's deaths. More than 25% of the victims are aged under 15 and more than 50% over 65. It is therefore not surprising that the Standing Interdepartmental Committee on Accidents in the Home should conclude in a report[1] just published: "The two most important causes of accidents in the home are faulty design and equipment and, in the broadest sense, human frailty; and . . . of the two, it is the human element—ignorance, carelessness, and physical disability—that is the more important." The size of the problem has perhaps not achieved the recognition it should. The number of deaths in domestic accidents in 1950–1, for example, was 12,631, which was 3,410 more than the 9,221 road accident deaths.

The commonest kinds of fatal accidents are falls, which comprise 58%, burns and scalds 13%, and coal-gas poisoning 8%. About nine-tenths of the falls, over half the burns and scalds, and nearly two-thirds of the coal-gas poisonings happen to old people over 65. In infancy the 12% of accidents attributed to suffocation are notable, but, since most of these deaths are probably not due to suffocation but to acute infections wrongly diagnosed, the figures are very unreliable.

While most home accidents could doubtless be prevented by what the report calls a little care and forethought, the age distribution of the deaths shows that the chief victims are the immature at one end of life's span and the infirm at the other. These people need more help than they are getting at present to survive what to them are such serious hazards as ill-lit staircases, unguarded fires, and worn-out electric flex. The Interdepartmental Committee and other bodies encourage the design of safe appliances for the home, and the excellent work of the Royal Society for the Prevention of Accidents makes it prominent among those organizations that give much-needed publicity to many domestic dangers and how they should be avoided. The family doctor could also do much to help. A visit to a patient may afford a timely moment for a word of advice on the dangers of an unguarded fire or the hazards of a slipping rug that he himself has barely survived. He can in addition command the patient's attention in a way that no organization ever can. No poster or pamphlet can match the doctor's personal guidance.

[1] *Accidents in the Home. Report of the Standing Interdepartmental Committee on Accidents in the Home.* London: H.M.S.O. Price 6d.

PROGNOSIS IN BRONCHIECTASIS

Bronchiectasis, once a disease within the domain of the physician, has latterly been regarded as more properly treated by surgery. There is no doubt that selected patients undergoing surgical treatment for bronchiectasis usually get complete and lasting relief from their symptoms. The indications for surgical intervention in this disease are fairly well defined—namely, foul sputum, recurrent pneumonia, and repeated haemoptysis. If, in patients with these symptoms, the disease is sufficiently localized to allow surgical removal, and if generalized respiratory catarrh is not the predominant feature, surgical resection offers the best hope of cure. But there are many sufferers from bronchiectasis for whom surgical treatment seems hardly justifiable, and others who, because of extensive disease, advancing years, or poor respiratory function, are denied the advantages of pulmonary resection. The assessment and management of such patients are fraught with anxieties and difficulties. The onus of treating these patients falls on the family doctor, whose problems are not wholly enlightened by reference to standard descriptions of the disease.

The survey of bronchiectasis in the Bedford area by Dr. N. Wynn-Williams, published elsewhere in this issue of the *Journal*, examines the subject broadly, and his conclusions should prove to be a valuable guide to the family doctor when advising about the treatment and prognosis of his patients. The burden of Dr. Wynn-Williams's report is that bronchiectasis is not quite such a disabling disorder as is generally supposed, and that surgical resection is by no means the only efficient method of controlling symptoms. The symptoms in his patients were milder than those often described, because most reports emanate from teaching hospitals, where seriously ill patients and those requiring surgical treat-

ment are usually admitted, and because careful bronchographic technique in all suspected cases revealed a high proportion of patients with bronchiectasis confined to a single broncho-pulmonary segment. In contrast to accepted views, fetid sputum, dyspnoea, debility, and early death were exceptional. Almost all patients were able to live a normal life at home and to take part in full activities at work or at school. Little deterioration was noted in the majority of patients during the five years of observation, and only two of 160 patients died from the direct effects of their bronchiectasis. Pneumonia was the commonest complication encountered. The beneficial effect of simple medical treatment was emphasized. Postural drainage and breathing exercises reduced the amount of sputum. The judicious use of penicillin and chloramphenicol not only controlled attacks of recurrent pneumonia but also prevented deterioration in general health after episodes of respiratory infection.

There is little doubt that chemotherapy combined with efficient physiotherapy has entirely altered the outlook for the bronchiectatic patients. The importance of Dr. Wynn-Williams's report is not that it detracts in any way from the value of surgical treatment in selected cases of bronchiectasis, but that it encourages careful and enthusiastic management of patients in their homes by methods available to the family doctor, and that it sounds a note of optimism to patients suffering from a disease which has often been shrouded in gloom.

MEDICAL ARRANGEMENTS IN THE ABBEY

Eight thousand people will be seated in Westminster Abbey on Coronation Day, and in addition there will be many others, such as gold staff officers, ushers, processionists, and those on duty in the annexe, for whom no particular seats have been assigned. The presence of so many people, a large proportion of them elderly, encumbered by ceremonial habiliments, remaining in a confined space from 7.30 in the morning until the afternoon, in an atmosphere charged with excitement and exaltation, raises, among other problems, that of medical service. The strain both upon participants and spectators may be severe. It is stated in the biography of Archbishop Lang that at the last Coronation Lord Dawson of Penn, fearing that the long and exacting service might be too much for a man of the Archbishop's years, sat in the south transept with a hypodermic syringe ready charged, prepared on a signal from a chaplain to hurry forward and administer an injection. Happily this dramatic and unrehearsed addition to the ceremony did not occur, but at the Coronation of Edward VII the Archbishop (Frederick Temple), then 80, showed signs of collapse, and at the Coronation of Queen Victoria it is recorded that an aged peer, after doing his homage, stumbled and rolled down the steps of the throne.

At the impending Coronation every eventuality appears to have been foreseen. Sir Horace Evans and Lieutenant-General Sir Frederick Harris, D.G.A.M.S., formed a medical subcommittee and appointed the Dean of Westminster Hospital Medical School (Mr. H. E. Harding, F.R.C.S.) in charge of the arrangements, with Major R. J. Gray, of the Army Medical Department, as assistant organizer. The medical arrangements follow the lines of those for the two previous Coronations—in 1911 and 1937—but certain inadequacies which gave rise to criticism at the Coronation sixteen years ago have been avoided. In addition to the chief organizer and his assistant, the medical men and women who will be engaged at the Abbey number 23. They have been appointed on the nomination of the directors-general of the medical departments of the three Services, the presidents of the Royal Colleges of Physicians and Surgeons, and the chief medical officer of the London County Council. For the first time two women medical officers, respectively from the medical departments of the Army and the Royal Air Force, have been included. All the medical officers are appointed to act as gold staff officers. The nursing staff on duty will number thirty, of whom ten are from Westminster Hospital, ten from the nursing services of the Army, Navy, and Air Force, five from the British Red Cross Society, and five from the Order of St. John. Twenty selected male members of the Order of St. John are to carry out stretcher-bearer duties in the Abbey.

The equipment for the medical services is on loan from Westminster Hospital, and an ambulance service will be ready to enable any casualty to be brought directly to the hospital about a quarter of a mile away. In the Abbey itself improved roof ventilation has been installed —again to meet a criticism made on the last occasion— designed to give a complete change of air in the building at least once an hour. Extensive and improved sanitary annexes at all tier levels, easily reached by the guests, have been provided. For the convenience of anyone experiencing temporary discomfort as a result of the fatigue of the ceremony or their own infirmities, medical chair spaces, with easy access from the stands, have been arranged for rest periods under medical supervision. Five first-aid stations have been established, four of them just outside the Abbey and one in King Henry VII's Chapel. The medical personnel has been divided into five teams, each in charge of a senior medical officer, and each consisting of five officers, except for the team in King Henry VII's Chapel, which consists of three. Those in charge of the five teams are, respectively, Lieutenant-Colonel N. G. G. Talbot, R.A.M.C., Surgeon Commander J. L. S. Coulter, R.N., Wing-Commander G. H. Dhenin, R.A.F., Mr. R. W. Nevin, a surgical consultant, and Dr. E. F. S. Gordon, a general physician. Similarly there are five nursing teams, one of them with three, and the others with from five to eight members, and the selection is again distributed among the various nursing services. A skeleton staff of doctors and nurses will be detailed for duty at each post, and the remaining members of each team will occupy strategic positions inside the Abbey, where they can see those who may have to have medical attention. It is not, of course, expected that there will be any large number of cases needing attention, but those responsible are determined that a splendid event shall not be marred by any flaw in the medical arrangements.

The Queen laying a memorial stone at the Royal College of Surgeons in London on May 5, 1953.

Receiving the Honorary F.R.C.O.G. on July 17, 1951.

Some Royal Occasions

Visiting a maternity hospital in Nairobi in 1952.

Talking to disabled veterans at St. Hyacinthe Hospital, Province of Quebec, 1951.

Receiving the Honorary F.R.C.S. on December 5, 1951.

REFRESHER COURSE FOR GENERAL PRACTITIONERS

THE TREATMENT OF ACCIDENTAL POISONING

BY

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The necessity for treatment of cases of poisoning occurs but infrequently in the routine of the general practitioner. On this account, when he is faced with the emergency of acute poisoning he is all too often taken off his guard and thus found ill prepared to provide adequate treatment. In poisoning cases, unless the correct treatment is promptly given it is of little value and fatality may ensue. The practitioner may thus find that the life of his patient depends in great measure on the action he initiates during the very short period after being notified that a case of acute poisoning has occurred.

It is proposed in this article to deal first with the general principles of treatment and thereafter with the specific lines of treatment to be employed in poisoning by a few of the commoner and more important poisons. Finally, the equipment, which should always be maintained in readiness for treatment, will be touched upon.

There are four general principles of treatment: removal of the poison from the stomach, or interception of its action prior to absorption; conversion of toxic substances into less toxic compounds; elimination of the toxic substances; and general symptomatic treatment. The prominence which should be afforded to each of these will be determined in large measure by the nature of the poison and the interval which has elapsed between its ingestion and the opportunity for seeing the patient.

Removal of the Poison and Prevention of its Action Prior to Absorption

Despite the development of antidotes, the rapid removal of poisons from the stomach remains the dominating factor in the treatment of poisoning by ingestion. This can be effected either by the induction of emesis or by gastric lavage. Probably the best method of causing vomiting is by subcutaneous injection of apomorphine, 1/12 gr. (5 mg.). With this dosage voidance of the gastric contents may be accomplished without much concomitant nausea and depression. This drug may prove ineffectual in comatose cases, in which there is a varying degree of impairment of the reflexes. Vomiting can be induced by merely tickling the soft palate. The traditional method of doing this was by means of a fine feather, but feathers of the appropriate character are not always at hand and it may be necessary to attempt the procedure with a piece of cotton-wool, gauze, or cloth. The more courageous may use a finger. These simple and homely methods are often unsuccessful but are probably worth a trial, especially with children, for when successful they are both rapid and effective. But it is a dangerous waste of time to persist in such manipulation once the initial attempts have proved a failure.

Many other methods of inducing sickness have been suggested, such as the administration of solutions of salt or mustard in water; but since the two previous methods are usually satisfactory, and should always be readily available to the practitioner, it is considered that he should confine himself to their use. Some of the other methods, such as the use of tartar emetic, are dangerous to the patient and should be discarded.

Gastric lavage is the most effective way of removing a poison from the stomach, and when carried out early can be a life-saving measure. Despite the fact that a considerable time has elapsed since the ingestion of the poison, gastric lavage may still form a useful part of the treatment. Cases are met with at necropsy in which numerous fairly large particles of phenobarbitone tablets are seen in the stomach because, apparently, lavage has been thought to be a useless procedure in view of the lapse of time between ingestion and the beginning of treatment.

In performing gastric lavage it is essential that a tube with a sufficiently large bore should be used. It is impossible to wash out an adult's stomach effectively by means of a Ryle's tube. Unfortunately this is sometimes attempted. A tube suitable for adequate gastric lavage in cases of poisoning in adults should be about ¼ in. or slightly less (1 cm.) in diameter, be composed of flexible rubber, and be about 5 feet (150 cm.) in length. In the case of children a tube of narrower calibre and shorter length should be employed. The entering end should be perforated by several openings, since even with a large-bore tube a single hole may readily become blocked. Since the average distance between the lips and the cardiac end of the stomach is approximately 18 in. (45 cm.), it is a convenience if the tube be marked at a point about 20 in. (50 cm.) above the entering end, thus providing an indication when the tube, on being passed, has entered the stomach. The termination of the lower end should be rounded off to avoid friction, and mechanical discomfort is further eliminated by warming the rubber and smearing it with a lubricant such as glycerin, olive oil, or petroleum jelly. In sensitive cases it may be of assistance to smear the tube thinly with a 1% cocaine ointment. A filter funnel should be inserted into the upper end of the tube.

In using the tube it is advisable that the head of the patient should be placed over the end of the bed. In this position the mouth and pharynx will be at a lower level than the larynx and trachea, and thus regurgitated fluid around the tube will not enter the air passages. The tip of the tube should be passed to the back of the pharynx, the tongue having been depressed with the finger, which is used as a guide for the tube, and so into and down the oesophagus. During this process the patient should be induced to swallow continuously and thus aid the passage of the tube.

For lavage, tepid water should be employed. It is advisable to test the temperature against one's own cheek or lip before pouring the fluid into the funnel. To aid the gravity feed the funnel should be held above the level of the patient, and to facilitate the siphon action, as the last portion of the fluid is being poured in, and the tube and a portion of the funnel are full of water, the tube at its junction with the funnel is pinched between the finger and thumb. The tube is then lowered below the level of the stomach, thus emptying the stomach contents. The process may be repeated as often as deemed necessary. A pint of fluid (rather more than half a litre) should be used for each lavage. For thorough lavage about 2 gallons (9 litres) of water in all should be employed. When the poison which has been swallowed is identified, a suitable antidote may be dissolved in the solution used for lavage. A small quantity of this fluid should be allowed to remain in the stomach on the completion of the process of gastric cleansing. In cases in which the poison swallowed is not known it may be necessary to retain some of the stomach washings for prompt analysis as a guide for subsequent treatment.

It is generally regarded as inadvisable to perform lavage in corrosive acid poisoning on account of the danger of resultant perforation. This complication should be kept in mind, but need not be adhered to as an inflexible rule. The specific circumstances of each case should decide the matter. For example, in a case seen very shortly after a strong acid has been swallowed the potential benefit which might accrue from immediate lavage should probably be allowed to outweigh the possible danger of perforation.

Conversion of Toxic Substances into Less Toxic Compounds

Next to be considered is the prevention of the action of the poison. This can be accomplished by the use of antidotes. These operate either in some part of the gastro-intestinal tract before the poison has been absorbed or in the blood stream subsequent to absorption. Antidotes may be utilized after the removal of the poison by emesis or gastric lavage, during lavage, or initially where these procedures are not feasible. They may also be employed as a first-aid measure.

The simplest antidotes are those which neutralize the action of strong acids or alkalis. If given promptly these are effective. Lime water or magnesium oxide should be used to neutralize acids. The use of sodium bicarbonate is strongly contraindicated on account of gas formation and consequent gastric distension. Vinegar, or a 5–10% solution of citric acid, will be found effective in the treatment of alkali poisoning. White of an egg can be used effectively to limit the absorption of certain poisons by the formation of albuminates. It is particularly successful in the treatment of poisoning by heavy metals. Tannic acid can also be employed in an attempt to precipitate some of the metallic and alkaloidal poisons. It can readily be administered as strong tea. It is difficult to estimate the degree of precipitation of which it is capable, but it seems to act in cases of poisoning by strychnine, cinchona alkaloids, and the salts of cobalt, copper, mercury, nickel, zinc, uranium, aluminium, lead, and silver. Charcoal can be employed to delay the absorption of poisons. This should be given as a tablespoonful dose of activated charcoal in water.

There are a number of so-called specific antidotes which operate by neutralizing the action of the poison after its absorption. These are discussed in more detail below. Some of the more important of them are: ferric chloride and dimercaprol ("B.A.L.") for arsenic; amyl nitrite for cyanides; "lethidrone" for morphine; barbiturates for cocaine and procaine; sodium amytal for strychnine; and atropine for the organic phosphorus insecticides.

Elimination of Toxic Substances

This can be attempted by increasing the excretory functions of the body. During this process steps must be taken to treat shock and to counteract, so far as is possible, the general effects of the poison. Provided the condition of the patient is suitable, the consumption of large quantities of tea will increase the rate of renal excretion, and in the less serious class of case may prove a useful measure.

By far the most effective method of diluting the absorbed poison and increasing its rate of elimination from the body is the intravenous administration of fluids. The best solution for this purpose is a 5% solution of glucose. It also has the important added advantage of replenishing the reduced liver glycogen. The quantity administered must, however, be controlled, since a danger arises from the use of an excessive quantity. If the heart's action is impaired, and it often is in serious cases of poisoning, there is a definite risk of "drowning" the patient. In most cases the use of diaphoretics in an attempt to increase the elimination of poison will do more harm than good.

It will be seen, therefore, that, while eliminating the toxic agent may be attractive in theory, in practice it should be used with great caution.

General Symptomatic Treatment

This must be approached along broad lines and be directed to the clinical manifestations of individual cases. It is sufficient to add that stimulation of the respiratory and circulatory systems should be resorted to immediately indications present themselves.

Specific Treatment

Aspirin (Acetylsalicylic Acid).—Although aspirin is a relatively non-toxic substance, its widespread domestic use and the carelessness with which it is left lying about have caused it to become an important cause of poisoning, more especially in children. Recently there has been some suggestion that it is being increasingly used for suicidal purposes. The important steps to be taken in acute aspirin poisoning consist in gastric lavage and combating acidosis. Acidosis is best overcome by the administration of intravenous sodium lactate (70%), 60 ml. per kg. body weight, at a rate not exceeding 300 ml. an hour. To obviate dehydration, fluids should be given either orally or intravenously. The patient should be kept warm, and if there is any sign of cyanosis oxygen should be used and 5 ml. of nikethamide given intravenously.

Arsenic.—While preparing the apparatus to wash out the stomach give a mixture containing 1 oz. (30 ml.) of tincture of ferric chloride and 1 oz. (30 g.) of sodium bicarbonate in 4 oz. (120 ml.) of water. Gastric lavage should be very thorough. Dimercaprol should be given intramuscularly as a 10% solution in peanut oil, using 2–3 mg. per kg. body weight, every four hours.

Barbiturates.—Acute barbiturate poisoning is becoming increasingly common and is the cause of a large number of deaths every year. There is growing evidence that a number of barbiturate compounds are more toxic than was originally supposed. Early effective gastric lavage is the most important factor in successful treatment. This should be carried out thoroughly despite the fact that a considerable time may have elapsed since the barbiturate was swallowed. About 60 g. of magnesium sulphate in solution should be allowed to remain in the stomach on the completion of the process of stomach washing. The following additional measures should be adopted. The air passages must be kept clear by aspiration and oxygen should be administered continuously. Penicillin, 50,000 units, should be injected every three hours in cases in which the respiratory function is depressed or in which coma has supervened. If the coma is prolonged, 5% intravenous glucose should be given until improvement becomes manifest. The bladder will need catheterization. The use of a large number of drugs has been advised in the treatment of barbiturate poisoning, but the balance of opinion inclines to the more conservative line of treatment as outlined. It is highly important for practitioners to have formulated in their minds a definite routine to employ in cases of barbiturate poisoning.

Hydrocyanic Acid and Cyanides.—If the poison has been inspired the patient should be removed immediately into fresh air. Should it have been ingested, gastric lavage should be commenced without delay. Amyl nitrite should be given by inhalation, 0.3 ml. for a period of twenty seconds every three minutes. This should be followed by intravenous sodium nitrite, 0.3 g. in 10 ml. of water at the rate of 2.5 ml. a minute. The patient must be kept at complete rest. If required, artificial respiration and oxygen should be used.

Morphine and Opium.—The stomach should be repeatedly washed out with a 1% solution of potassium permanganate. A solution containing 30 g. of magnesium sulphate should be left in the stomach at the last washing. If respiration is depressed, and in nearly all serious cases this is so, give 40 mg. of amphetamine sulphate intravenously. Inhalation of oxygen should also be given. If the patient is comatose inject penicillin and do not forget to catheterize the bladder. Recently, lethidrone (N-allyl*nor*morphine hydrobromide) has been advocated as a specific antidote. It may be used either subcutaneously or intramuscularly in a single dose ranging from 10 to 40 mg.

Inorganic Corrosive Acids (including Nitric, Sulphuric, and Hydrochloric Acids).—If the patient is seen very shortly after the ingestion the question of passing a stomach tube must be carefully weighed. If this is considered expedient, in the light of all the clinical aspects of the case, gastric lavage with an alkaline solution—for example, a solution of cream of magnesia or lime water—may be found valuable. Thereafter, such bland fluids as milk, egg albumen, olive oil, or barley water may be given. Alkaline carbonate should be avoided on account of the likelihood of gastric distension due to the liberation of carbon dioxide. To alleviate pain morphine may usefully be employed.

Carbolic Acid and Phenols.—If the patient is seen after a considerable lapse of time following the ingestion of one of the concentrated phenols and is complaining of severe abdominal pain, the use of the stomach tube or emetics is probably fraught with danger. It is then advisable to administer egg albumen, concentrate on maintaining the patient's strength, and treat symptoms as they may arise.

Organic Phosphorus Insecticides ("T.E.P.P." and "H.E.T.P.").*—The patient must be kept at complete rest. All contaminated areas should be washed. Atropine, 0.5 mg., should be given subcutaneously and repeated hourly until the symptoms have abated. If necessary, oxygen should be administered and artificial respiration applied.

Carbon Tetrachloride.—This substance is in extensive industrial use and cases of poisoning are relatively frequent. When a person in contact with carbon tetrachloride shows evidence of poisoning the case should be regarded as serious even though the initial symptoms are slight. The patient should immediately be removed from all possibility of further poisoning and must be kept at absolute rest in bed. If the poison has been ingested gastric lavage should be used and a fairly large dose of magnesium sulphate should be left in the stomach. A high carbohydrate and protein diet should be given, and 3 g. of methionine should be injected intravenously daily. Alcohol should be avoided as a stimulant. In addition to the risk of damage to the liver, there is also a danger of renal failure, and every effort should be made to stimulate renal function by the oral administration of large quantities of fluid and by the use of hypertonic intravenous glucose.

Poison Kit

It is a sound provision for a practitioner to have in readiness for immediate use a small case containing equipment for treating cases of poisoning. The following are some of the essentials: a stomach tube suitable for adults and one for children; a container with suitable ordinary lubricant and one with anaesthetic lubricant; a filter funnel for attachment to stomach tube; amyl nitrite ampoules; olive oil; iron sulphate solution; magnesium sulphate; amphetamine; lime water; sodium amytal; nikethamide; apomorphine; and calcium gluconate.

Next Refresher Course Article.—"Death Certification," by Dr. W. P. D. Logan.

RESPIRATORY PARALYSIS IN POLIOMYELITIS

A meeting at the Ministry of Health last month, under the chairmanship of Sir John Charles, the Chief Medical Officer, discussed the implications of the recent Danish outbreak of poliomyelitis in which there were many cases with respiratory paralysis. These cases were treated by Professor Lassen by a new method: a tracheotomy was performed and a cuffed endotracheal tube inserted, through which intermittent positive-pressure ventilation with a nitrogen–oxygen mixture was maintained by manual compression of a rubber bag (see leading article at p. 1208). The opening speakers had been to Denmark to see Professor Lassen's method in action.

*"T.E.P.P." is tetraethylpyrophosphate and "H.E.T.P." is hexaethyltetraphosphate.

Reports from Visitors to Denmark

Dr. W. H. KELLEHER said that Lassen's method deserved careful study. It should be used, perhaps with some modifications, for appropriate cases in this country. The Danes had found that postural drainage alone was not always enough for some of the bulbar cases, and they claimed that their method had brought about a considerable fall in the mortality. He questioned, however, the need for a closed-circuit apparatus with the danger of inhalation of soda-lime particles. The use of silver tubes instead of rubber ones might lessen the risk of producing tracheal stenosis.

Dr. B. A. SELLICK had had the impression that in Denmark more cases than necessary were subjected to tracheotomy, and suggested that instead of immediate tracheotomy an endotracheal tube should be passed through the mouth (when the upper air passages had been cleared) and allowed to remain there for 8 to 12 hours while the patient's condition was being assessed and the causes of respiratory embarrassment defined. He mentioned the practice of Nielsen, of Sweden, who leaves an endotracheal tube in place for as long as three days in the treatment of barbiturate poisoning, although this might not be easy in a conscious patient. He wondered why so much stress was laid on the 50/50 mixture of oxygen and nitrogen; at any rate in the more chronic cases mixtures of air and oxygen, or compressed air alone, should be satisfactory. Adequate postural drainage was most important, and drugs to prevent bronchospasm and reduce sputum viscosity were also useful.

Dr. A. B. CHRISTIE and Dr. J. R. ESPLEN discussed the types of case for which Lassen's method was suitable. Postural drainage was difficult when the patient was in a tank respirator, but could easily be carried out with the Copenhagen method; the amount of secretion that could be aspirated through the endotracheal tube was impressive.

Dr. G. E. BREEN, whose visit to Copenhagen had been more recent, said that the Danes were now inclined to think that cuffed tubes were not always necessary and that well-fitted silver cannulae were quite satisfactory in some cases. They had completely abandoned the use of tank respirators and were relying on bag ventilation. He thought that a Bang respirator, compressed air with a Kifa motor, or a Spiropulsator might perhaps replace manual compression. A Bang respirator cost £40 to £50 and a Spiropulsator about £150.

Discussion

Mr. T. HOLMES SELLORS emphasized the valuable part that anaesthetists with experience in chest surgery could play. They were skilled at treating "wet lungs," and their advice should be sought in the early stages. It was important to avoid unnecessary tracheotomies, and he stressed the value of proper postural drainage.

Dr. W. RITCHIE RUSSELL agreed with Mr. Holmes Sellors; nurses needed training in performing postural drainage. Pure spinal cases should be treated in tank respirators, while postural drainage was the treatment of choice for pure pharyngeal cases. He was somewhat sceptical about the claims put forward for the Copenhagen method, and thought that it was only likely to be useful for combined bulbar and spinal cases.

Mr. T. CAWTHORNE reminded the meeting that tracheotomy could be mutilating; when resorted to, it should be carried out below the first ring of the trachea so as to avoid subsequent laryngeal stenosis. The use of an expiratory valve would allow the patient to cough and use his voice, the valve being removable to permit the aspiration of secretions. Tracheotomies should be performed by persons with experience of them: a circular hole was best, as it was least likely to cause stenosis.

Dr. A. C. SMITH, an anaesthetist with experience of head injuries, described his practice of emptying the stomach and bronchi in patients whose cough reflex had been lost. There was a danger of ulceration of the glottis and trachea if endotracheal tubes were left in place for too long. He

also referred to a hand inflator developed by Professor R. R. Macintosh, of Oxford, which was useful as an emergency measure. Dr. T. D. CULBERT thought that the analysis of blood gases was often a help in managing patients being treated by artificial respiration. Dr. T. ANDERSON, who had visited Copenhagen, stressed the value of team work in dealing with these cases, but the team must have a leader. An adequately trained nursing staff was also important. Dr. E. C. BENN urged that a modified tank respirator should be designed to allow patients to be nursed prone so as to ensure adequate postural drainage. Dr. J. G. JOHNSTONE, on behalf of the Ministry, said that specifications would shortly be circulated for the modification of the Both respirator, but these modifications would not facilitate the use of postural drainage.

The Artificial Student

At the conclusion of the meeting Dr. R. A. BEAVER demonstrated a machine which he had developed to provide automatic compression and which could be used in conjunction with bag ventilation (the "artificial student"). Such a machine could be produced for £16, but at the moment it was impossible to purchase the electric motors, as there was a delay of three months in delivery from the manufacturers. He hoped shortly to publish details of his machine.

DOCTORS AT COURT

THE MEDICAL HOUSEHOLD

The appointment of Court physicians and surgeons is in the gift of the Lord Chamberlain, the chief officer of the royal household. Those appointed are under his superintendence in the same way as the dean of the chapels royal, the groom of the robes, the poet laureate, the master of the Queen's musick, the surveyor of the Queen's pictures, and the bargemaster and keeper of the swans.

The present medical household consists of thirty-six appointments. It includes three physicians; one physician-paediatrician; three extra-physicians; one sergeant-surgeon; two surgeons; three extra-surgeons; a surgeon-oculist; an extra-manipulative surgeon; an extra-orthopaedic surgeon; an aurist; a surgeon-dentist; an extra-surgeon-apothecary; an extra-physician to the household; a surgeon-oculist to the household, together with an extra-surgeon-oculist; an apothecary to the household; a surgeon-apothecary and an extra-surgeon-apothecary to the household at Windsor, and a surgeon-apothecary to the household at Sandringham, and finally a coroner to the household. To this impressive list must be added the medical department of the royal household in Scotland, consisting of three physicians, two surgeons, one surgeon-oculist, a surgeon-dentist, and surgeon-apothecaries to the households at Balmoral and Holyrood.

The terms "ordinary" and "extraordinary" have recently been abolished. Francis Watson in his recent biography *Dawson of Penn* states that the appointments which are made to the "household" are nowadays full-time salaried posts, paid from the Civil List, and carry the responsibility of treating the entire staff at a royal residence. The other appointments are either honorary or, in one or two cases, carry a small retaining fee. When the sovereign personally requires medical attention, any fee which may be paid is from the Privy Purse.

The Sergeant-Surgeon

The attachment of certain medical men notable for their learning and skill (or sometimes perhaps principally for their courtliness) to the service of the sovereign and the court dates back to the earliest reigns. The sergeant-surgeon goes back to the fifteenth century. The "sergeant" part of this rather odd-sounding title seems to date back to feudal times and to derive from the Latin "serviens." In those days all dignities, honours, and public offices—to say nothing of the tenure of land—were derived from the Crown, and service to the Crown (*feodale servitium*) was rewarded by the grant either of land or of honours without land. These two classes of recipients of royal favours together formed the "Sergeantry" of the country—presumably in contradistinction to either the aristocracy or the peasantry.

The first recorded Sergeant-Surgeon was a certain William Hobbes (1461), of whom little is known except that his salary was "40 marks (£26 13s. 4d.) with wine, wax, and requisites for cure." Apparently at first there was only one Sergeant-Surgeon (as to-day), but Queen Elizabeth I was the first to appoint two, and later even more, "extraordinary" Sergeant-Surgeons—this term having the old meaning of "supernumerary." It is still used in the medical Royal Household of to-day—usually in the sense of "retired."

There seems little doubt that in the early days the position carried military responsibility, the official duty of the Sergeant-Surgeon being to accompany his King on to the field of battle, there to cater for the monarch's immediate medical needs. The last Sergeant-Surgeon on record as fulfilling this duty was John Ranby, who was with George II at Dettingen in 1743. The status of the Sergeant-Surgeon is well exemplified even in the days of the "United Company of Barbers and Surgeons" (1540–1745), when regulations laid down that he should "sit next to the Past Master on the Bench when the Master do sit" and that as soon as possible he should be made master. After the surgeons' separation from the barbers (1745) the "Surgeons' Company," which continued until 1796, has records to show that the Sergeant-Surgeon on his appointment must be admitted to the Council and Court of Examiners as soon as a vacancy occurs and must be regarded as Master of the Company.

The early Charters of the Royal College of Surgeons (1820, 1822, and again in 1843) made the admission of the Sergeant-Surgeon to the Court of Examiners compulsory, but he had no preferential rights in respect of admission to the Council. In 1852 these rights fell into abeyance. Over the intervening years the Sergeant-Surgeon has come to be regarded as the senior of the Royal Surgeons—his duties being in the main consultative. The present holder of this office is Sir Arthur Porritt.

The Royal Touch

James I surrounded himself with doctors, among them Sir Theodore de Mayerne, a Swiss; Sir William Paddy, who was appointed by the King on his accession; and the sergeant-surgeon, William Clowes, junior (whose father had been surgeon to Queen Elizabeth). Clowes was deputed specially to examine all persons brought in to be cured by the royal touch. In the pages of Pepys we have many of the King's doctors—Thomas Waldron, physician in ordinary to Charles II; James Pierce, surgeon to the Duke of York. And there was Dr. Frazer, with whom and with the rest of the doctors much fault was found over the death of the Princess Royal in 1660.

We have the doctors in attendance at the deathbed of Anne—Sir Richard Blackmore, who had been physician to William III; John Shadwell, who was also to be physician to the first and second Georges, Richard Mead, who enhanced his reputation in the succeeding dynasty by "recovering the Princess of Wales, when the other physicians had certainly killed her," and John Arbuthnot, said to have been Anne's most favoured physician, and not forgetting one who did not attend—namely, John Radcliffe, famous for his neglect of the summons. William III, incidentally, if Macaulay is to be trusted, addressed to his medical household on his deathbed these noble words: "Gentlemen, I know that you have done all that skill and learning could do for me; but the case is beyond your art, and I submit."

At the beginning of the nineteenth century there were in the King's service three physicians extraordinary, two sergeant-surgeons, three surgeons extra to the person, one surgeon to the household, and two surgeons extra to the household. A dentist had by then taken the place of an

earlier "operator for the teeth," and there was also an "operator for the hands and feet." A few years later the number of physicians extraordinary was increased to five, one of whom was William Heberden, physician to both the King's and the Queen's household. There was a surgeon to the household, an oculist, and an apothecary. And at this time there was a new appointment in the medical list—that of barber.

Doctor's Orders

In the reign of William IV the list of physicians in ordinary was headed year by year by the President of the Royal College of Physicians, but apparently this usage did not survive the reign. As befitting a sailor king, William had a naval surgeon attached to his household. Although the fame of Brighton is associated chiefly with his predecessor, one of William's physicians extraordinary, two of his surgeons extraordinary, and his surgeon-dentist all carried the appellation "of Brighton." The "operator on the foot" had by now become the surgeon-chiropodist. Another surgeon in the household of William was Robert Keate, who was also one of the three sergeant-surgeons in the early reign of Queen Victoria. Of Keate it is told that he was summoned to Queen Adelaide, who had pain in the knee. The King was present, and the Queen intimated to the surgeon that he should ask him to withdraw. "I'm hanged if I do," said William. "Then I'll be hanged if I stay," said Keate. The King gave way. "You doctors can do anything," he said, "but if the Prime Minister or the Lord Chancellor had presumed to order me out of the room it would be his successor I should interview to-morrow."

In addition to Keate there were two other sergeant-surgeons in Queen Victoria's first medical list—Sir Astley Cooper, who had attended William IV and George IV, and Sir Benjamin Brodie. The physicians in ordinary included Sir James Clark (whose tenure of the office was long if not very glorious), Sir Henry Halford, and Dr. W. F. Chambers. Queen Victoria gave birth to her first child in 1840, and the list for 1841 includes a first physician-accoucheur, Charles Locock, a second physician-accoucheur, Robert Ferguson, and a surgeon-accoucheur, Richard Blackburn. Later in the Queen's reign, in 1862, William Jenner became physician in ordinary, and in the following year the Prince of Wales set up his medical household, of which Jenner was a member, as was also James Paget, who had been appointed to the household of Queen Victoria in 1858. At this time there were apothecaries to the households at Windsor and Osborne, and physicians and surgeons attached to Her Majesty in Scotland and in Ireland. In 1887, the year of the Queen's jubilee, Joseph Lister's name appears as surgeon extraordinary.

The Twentieth Century

The first medical household of Edward VII consisted of three physicians in ordinary—Sir W. H. Broadbent, Sir James Reid, and Sir Francis Laking—and five physicians extraordinary. Sir Thomas Barlow was physician to the household. Lord Lister was sergeant-surgeon, and there were two honorary sergeant-surgeons, one of whom was Sir Frederick Treves, and three surgeons in ordinary. Other offices included that of an anaesthetist and a surgeon-apothecary to the household at Sandringham.

In the first year of the reign of George V the physicians in ordinary remained as they had been ten years earlier except that Sir Richard Powell had taken the place of Sir W. H. Broadbent. Bertrand Dawson was one of the three physicians extraordinary, his appointment having been made by Edward VII in 1907. Sir Thomas Barlow was still physician to the household, and Lord Lister sergeant-surgeon with Sir Frederick Treves. Sir Anthony Bowlby was surgeon to the household, and a new appointment was that of bacteriologist (Dr. Spitta). Among other offices was that of laryngologist (Sir Milsom Rees). At the end of the reign the physicians in ordinary were Lord Dawson of Penn and Sir Farquhar Buzzard, and the physicians extraordinary Sir Humphry Rolleston, Sir Thomas Barlow, and Sir Maurice Cassidy; the physician to the household was Dr. J. A. Ryle; there was by then only one sergeant-surgeon, Wilfred Trotter, and there were two honorary surgeons, Sir Thomas Dunhill and Sir Hugh Rigby, and a surgeon to the household, Sir James Walton. In 1937 Lord Horder and Sir John Weir joined the company of the physicians and Sir Farquhar Buzzard became an extra physician.

At the death of George VI, in 1952, the physicians were Sir John Weir, Sir Horace Evans, and Sir Daniel Thomas Davies, with Lord Horder and Sir Henry Tidy as extraordinary physicians. Sir Thomas Dunhill was sergeant-surgeon, and there were three surgeons and an extra surgeon, and also a manipulative surgeon (Sir Morton Smart). The total number of the medical household was twenty-four in England and eight in Scotland. The number has remained remarkably constant over fifty or more years. It has been lessened by the lapse of the Irish appointments, but increased again by the number of specialist appointments which have been created.

Nova et Vetera

MEDICINE AND THE ABBEY

Among the famous persons commemorated in Westminster Abbey fourteen were members of the medical profession. There are also memorials to an unqualified practitioner and to a distinguished experimental physiologist. The remains of six of these men lie in the Abbey, the others being commemorated by memorial tablets and busts. Six were natives of Scotland. Two (Goldsmith and Livingstone) are remembered for work outside the field of medicine.

John Woodward (1665–1728), the first medical man to be buried in the Abbey, was professor of physic at Gresham College. He wrote extensively on geology and natural history. His incessant quarrels with Mead and Freind (see below) led on one occasion to a duel with the former beneath the walls of the Royal College of Physicians in Warwick Lane.

Hugh Chamberlen, the Younger (1664–1728), was the last member of the family famous for their "secret instrument," the obstetric forceps, and was responsible for its becoming public. He was three times censor of the Royal College of Physicians.

John Freind (1675–1728), physician and politician, was Queen Caroline's physician and a lifelong friend of Richard Mead. His *History of Physick from the Time of Galen to the Beginning of the Sixteenth Century* (1725–7) marks him as the first English medical historian. His monument includes a lengthy Latin epitaph on which Pope pronounced: "One half of which will never be believed, the other never read."

Richard Mead (1673–1754), a native of Stepney, studied medicine at Padua and Oxford. He was physician to George II, and enjoyed a large and fashionable practice.

Rev. Stephen Hales (1677–1761), physiologist, botanist, and inventor, was perpetual curate of Teddington, Middlesex. His physiological experiments included the first measurement of the blood pressure, for which he devised the manometer.

Joshua Ward (1685–1761) was a quack doctor and philanthropist whose "drop and pill" made him famous. He is said to have invented "Friar's balsam." He founded a hospital near Buckingham Palace. In his will he expressed a wish to be buried in front of or near the altar of Westminster Abbey. His body lies in the south transept.

Oliver Goldsmith (1728 or 1730–1774). After studying medicine at Edinburgh and Leyden without success, Goldsmith obtained a dubious medical diploma at Louvain or Padua. He practised for a short time in Southwark before turning to literature. The Literary Club, of which he was one of the nine original members, erected his monument (by Nollekens) in the Poets' Corner, and Dr. Johnson wrote the epitaph.

Sir John Pringle (1707–82) abandoned preparations for a commercial career after hearing Boerhaave lecture on medicine at Leyden. He obtained his doctorate in medicine there and then practised in Edinburgh. From 1734 to 1744 he was joint professor of pneumatics [metaphysics] and moral philosophy at Edinburgh. In 1742 he was appointed physician to the Earl of Stair, then commander of the British Forces on the Continent; two years later he became physician-general to the Forces in Flanders. He was present at Culloden. He was physician to both Queen Charlotte and George III. Pringle was President of the Royal Society from 1772 to 1778. His work on septic and antiseptic substances gained the Copley medal. His memoir *On the Nature and Cure of Hospital and Jayl Fevers* (1750) showed their identity with typhus. But his greatest work was the reform of military medicine and sanitation, the principles of which he laid down in *Observations on the Diseases of the Army* (1752). It is believed that Pringle first suggested that military hospitals should be considered as neutral in wartime, a suggestion which led eventually to the idea of the Red Cross. Pringle married the second daughter of Dr. William Oliver, of Bath, inventor of the "Bath Oliver" biscuit.

Sir Richard Jebb (1729–87) was a favourite of George III and he became his physician in 1786. He enjoyed a high professional reputation and an extensive and lucrative practice. He is buried in the west cloister.

John Hunter (1728–93) received his medical education in London, where he assisted his brother William in teaching anatomy. One of the greatest surgeons of all time, he is buried in the north aisle.

William Buchan (1729–1805) studied medicine under James Gregory at Edinburgh. He is remembered almost solely for his *Domestic Medicine; or the Family Physician*, of which 80,000 copies appeared during his lifetime and many thousands afterwards. He is buried in the west walk of the cloisters.

Matthew Baillie (1761–1823) was a nephew of John Hunter and brother of Joanna Baillie, the poetess. He became physician extraordinary to George III. His *Morbid Anatomy* (1793) was the first systematic textbook of that subject, which it treated for the first time as an independent science. Baillie was the last owner of the Gold-headed Cane, which after his death was presented to the Royal College of Surgeons by his widow.

Thomas Young (1773–1829), physician, physicist, and Egyptologist, was professor of natural philosophy at the Royal Institution. He is regarded as the founder of physiological optics: he gave the first description of astigmatism, and he established the wave theory of light. Before the age of 20 Young had mastered Latin, Greek, Hebrew, Chaldee, Arabic, Syriac, Persian, French, Italian, and Spanish; he played some part in deciphering the Rosetta Stone.

Sir James Young Simpson (1811–70) proved the efficacy of chloroform as an anaesthetic, and succeeded, in spite of great opposition, in obtaining its adoption in childbirth. In 1839 he was made professor of midwifery at Edinburgh. He also made notable contributions to obstetrics and gynaecology.

David Livingstone (1813–73) began work in a cotton factory, but determined to become a medical missionary. He is renowned for his explorations in Africa. In his *Missionary Travels* (1857) he accurately described and pictured the tsetse fly, and in a letter to the *British Medical Journal* (1858, p. 360) he described his use of arsenic as a remedy for trypanosomiasis in a horse. He died at Chitambo's Village (now in Rhodesia) in 1873, where his faithful servants, having removed his heart and viscera, embalmed his body and carried it to the coast. He is buried in the centre of the nave.

Joseph Lister (1827–1912), 1st Baron Lister, one of the greatest names in British surgery. He was son of the famous microscopist, Joseph Jackson Lister, and received his medical education at University College Hospital, London. He occupied successively the chairs of surgery at Glasgow, Edinburgh, and King's College, London, and was president of the Royal Society from 1894 to 1900. His antiseptic principle was first outlined in 1867 in a series of papers on the treatment of compound fractures. He was the first medical man to be raised to the peerage, and one of the first 12 members of the Order of Merit at its foundation in 1902.

Since the days of Lister, no individual medical man has been commemorated in the Abbey. There is, however, a memorial tablet to the 6,873 officers and men of the Royal Army Medical Corps who fell in the 1914–18 war. The R.A.M.C. is also commemorated by a window on the north side of the nave, having for its subject Edward the Confessor and Edwin, his friend and adviser. There are also a memorial chapel and window to those members of the nursing and midwifery professions who died during the 1939–45 war.

Correspondence

Tropical Diseases in Britain

SIR,—I greatly enjoyed reading the excellent annotation entitled "Tropical Diseases in Britain" (*Journal*, May 16, p. 1096).

I venture, however, to offer two criticisms. You state that "a first and elementary step in its [that is, suspected malaria] investigation should always be an examination of blood films for malaria parasites. Any treatment in advance of this blood examination is most undesirable, as it may vitiate the diagnosis." While such a procedure is perfectly safe in benign tertian malaria, the withholding of treatment even for a few hours may be disastrous in malignant malaria. Bitter experience acquired in the course of several years' clinical practice in the Tropics taught me that when acute illness could possibly be due to malignant tertian malaria blood films should be taken at once and, unless the report could be available within a few minutes, quinine given. Furthermore, if any doubt exists as to the closeness of supervision or the retention of the quinine, the dose (0.6 g. of quinine dihydrochloride in 2 ml.) should be given intravenously, dissolved in at least ten times its volume of sterile saline. No harm is done if the cause should turn out to be other than malaria, while such a procedure will undoubtedly on occasions save life.

In discussing protozoal dysentery, you state that "emetine, though very remarkable in treatment, should find no place in diagnosis." If that means that emetine should never be used unless *E. histolytica* has been found, then I disagree. In countries like Britain amoebiasis presents infrequently, and the standard of obtaining and examining specimens cannot reasonably be expected to be comparable to those of a tropical hospital. The value of a negative report is therefore much less. I can think of several cases of amoebiasis in which illness would have been prolonged indefinitely or the patients might have died if emetine had been withheld until the parasite had been found.

A mark of the good clinician in this field should not be that he never treats without bacteriological proof, but that he knows when to treat without proof and without letting such action blind him to an error in his clinical diagnosis.—I am, etc.,

Birmingham. W. MELVILLE ARNOTT.

Kwashiorkor

SIR,—Having treated a small number of African children with kwashiorkor in Mauritius I was very interested to read the full account of this disease in the articles in the *Journal* of October 11, 1952, and in the subsequent correspondence. Two of my cases were of particular interest in their response to treatment.

They were going downhill although on a high-protein diet consisting mainly of meat and fish with some vegetables supplemented with the soluble milk protein ("casilan Glaxo") and glucose given in milk. The children became very wasted, developing advanced skin changes and marked oedema, and were passing undigested food in an offensive

fluid motion. They appeared to be starving to death. They were taken off all ordinary foods and put on a diet consisting solely of soluble milk protein and glucose in water, 100 g. protein and 25 g. glucose being given daily. The improvement in their general condition was apparent within 24 hours. Instead of being lethargic, semiconscious infants they were again taking notice of what went on in the ward. Their stools became more formed and less offensive. The oedema disappeared in a few days. A little while later they were "weaned" to the previous diet and continued their recovery.

Considering what is known about the pathology of kwashiorkor this seems to be a rational method of treatment for those cases which do not respond to the usually adequate high-protein diet.—I am, etc.,

Mauritius. E. R. HUEHNS.

Phenylindanedione as Anticoagulant

SIR,—Phenylindanedione in the British form of "dindevan" has been used in over 100 cases in this hospital for anticoagulant therapy along the lines discussed by Dr. M. Toohey (*Journal*, March 21, p. 650). Four medical units and one surgical unit have used it routinely and on an increasing scale since August, 1952. Prothrombin estimations have been required only three times weekly, and, with close laboratory–ward liaison, dosage is adjusted according to results.

As Dr. Toohey has pointed out, control of cases receiving dicoumarol or ethyl biscoumacetate ("tromexan") can be difficult. The sudden "escape" of the dicoumarol-treated case to prothrombin levels where haemorrhage can be expected is familiar to all who have used this drug; and the wide fluctuations of prothrombin-times during tromexan therapy require daily prothrombin tests and constant adjustment in the individual case. With phenylindanedione control has been remarkably easy. In only three cases was the prothrombin time increased to levels where haemorrhage could be expected. Two of these cases responded in eight hours to vitamin K_1 by mouth, but the third case was at safe levels within 12 hours without any treatment. In two of the cases the fault lay in a high prothrombin time being ignored and further phenylindanedione given. The dosage scheme of 200 mg. (100 mg. morning and evening) the first day, followed by 100 mg. (50 mg. morning and night) on the second day, and then by daily maintenance doses of 100 mg. in the average case, is simple and suitable for 70% of cases. The sensitive or severely ill case requires less and the sturdy, improving case requires more.

From a laboratory point of view this anticoagulant has altered the picture of such therapy. Only too often, because of disasters in the past, clinicians are chary of anticoagulant therapy, with the result that few cases are under adequate control for more than one-third to one-half of the duration of treatment. With phenylindanedione this situation no longer obtains, and anticoagulant therapy need no longer be a mixture of anxiety and frustration.—I am, etc.,

London, N.19. J. G. A. MCSORLEY.

"Abstracts of World Medicine"

SIR,—We have read the annotation on edited bibliographies (May 2, p. 986) and should like to express appreciation of *Abstracts of World Medicine*. The editors and contributors provide what we need. The contents are selected as we should wish, and their style shows consideration for the reader. The *Abstracts* help those of us living in awkward places. Although, of course, they cannot bring us a medical reading-room, they expedite each visit to one; and when we must break off to catch the train, we may expect that what was most useful in the journals left unread will appear in the *Abstracts*.

There is another point. Everyone may read a branch of medicine "in his stride," but when we read several branches we sometimes falter, especially in those that are scientific as opposed to clinical. And how frequently reference to a summary in the *Abstracts* lends a hand then. For, thanks to thoughtful preparation, it will offer a clear version of the difficult section or else guidance enough for us to discover the fruitful implications of sentences that looked like barren words until we consulted this pathfinder.—We are, etc.,

R. K. PHILLIPS.

Hythe. RANDOLPH WHITE.

Cancer and Organic Content of Soil

SIR,—How does Mr. C. D. Legon (*Journal*, April 25, p. 937) know that the malignant mutation is irreversible? It is not irreversible in the rat, and I imagine that very few senior practitioners are unable to deny that they have seen natural regression of cancers in their own practices. A sweeping statement that mutation is irreversible undermines, if it does not actually destroy, the patient's will to recover.

I would counter Mr. Legon's assertion with a direct contradiction, offering as evidence the case of experimental rats. He must, presumably, prove that the reaction of man is inferior to that of the rat.—I am, etc.,

Caernarvon. GRIFFITH EVANS.

Cancer of Stomach and ABO Blood Groups

SIR,—Professor Ian Aird, Mr. H. H. Bentall, and Dr. J. A. Fraser Roberts (*Journal*, April 11, p. 799), in an interesting article, gave data which suggest that there is an association between cancer of the stomach and A, B, and O blood groups. The highest incidence of this disease is among group A people, the difference being sufficiently striking to make it probable that other comparable data will show the same tendency. If this correlation is proved, the effect might either be the result of the presence of A substance in the body or the result of some other effect of the gene.

Humans can be divided into two groups, those who secrete the A, B, and O substances in the body fluids, particularly the saliva, and those who do not, who represent approximately 25% of the population, with some racial variation. This difference is controlled by a gene closely associated with the *Lewis* blood groups. Race and Sanger[1] have already pointed out that there must be a great difference between these secretors, who are continually swallowing large quantities of these blood-group substances, and the non-secretors, who are not. If the tendency to develop cancer is increased by the presence of the A substance itself, cancer of the stomach might particularly be expected among those of the A group, who are also secretors and are therefore swallowing large quantities of this substance. Consequently, in any future investigation it would be well worth while looking at the frequency of secretors in the A group people who have the disease and the controls who have not, especially as the technique for identifying secretors is relatively easy.

If this suggestion is confirmed by future research it would also be well worth while paying particular attention to other tissues which are also bathed by body fluids carrying the blood-group substances in secretors.—I am, etc.,

Oxford. P. M. SHEPPARD.

REFERENCE

[1] *Blood Groups in Man*, 1950, Blackwell, Oxford.

Endocrines in the Treatment of Cancer

SIR,—May I trespass on your space with some reflections on your leading article on this subject in your issue of April 25 (p. 924)?

Valuable as the hormonal treatment of cancer may be in specific cases, it should be borne in mind that any good result is very seldom the effect of direct action on the growth itself, but of changes wrought in the internal cell environment. The same constitutional change is also brought about by removal of the adrenals, pituitary, and gonads. In this latter connexion, and as a commentary on the good results claimed by Huggins[1] for adrenalectomy, I understand that the Mayo Clinic staff have now abandoned this operation, while my own experience of ovariectomy in breast cancer is similarly disappointing. In any case, this latter operation would, prima facie, appear illogical and

unnecessary, for an adequate degree of ovarian suppression may be obtained with the appropriate opposite hormones combined with thyroid hormone: a similar comment applies with equal force to the more recent and certainly more dangerous operation of hypophysectomy. (After massive doses of testosterone the pituitary gland shrinks to almost a third of its former size, as proved at necropsy.)

My own experience in this latter field extends to a little over 22 years, when I began first to treat inoperable breast and genital cancer in Berlin with an oestrogen (" progynon ") and later in London (1938) with androgens, long before Huggins published his excellent work.

Again the results, from the curative angle, have been partly disappointing, but there is little doubt of the symptomatic relief and prolongation of life, apart from those apparently hopeless cases rendered operable by massive implantation dosage. During the past five years, however, I have been increasingly gratified by the action of thyroid hormone in the prevention of recurrence after radical operation for cancer of the breast, ovary, and uterus. The rationale is based on the observations that many, if not the majority, of cancer patients are of the obese type, with a fairly high blood cholesterol content, and that mortality figures show a preponderance of cancer deaths in persons above normal weight. (Observations made by American life assurance companies of 180,000 men and women.) It is, indeed, not a good prognostic sign when a patient puts on weight after radical operation, as that mostly indicates a relapse to the unfavourable metabolism prior to the operation. Again, hyperthyroid patients develop cancer to a lesser degree than hypothyroid ones. Of 150 myxoedematous patients observed at the thyroid clinic of the Massachusetts General Hospital, six showed malignancy, but this was present in only seven of 1,300 suffering from hyperthyroidism (personal communication).

It would seem reasonable, therefore, to give thyroid in fair dosage after carcinoma operations, even when the basal metabolic rate is normal. To what extent it may be combined with androgens or oestrogens depends on the individual case, according to the predominance of oestrogen or gonadotropin. In either case, however, it does help in maintaining the normal cell environment, with consequent better resistance to cancer development.—I am, etc.,

London, W.1. A. A. LOESER.

REFERENCE

[1] *J. Urol.*, 1952, **68**, 875.

Haemolytic Disease in a First-born Infant

SIR,—As Dr. C. F. Anderson rightly points out in his case report (*Journal*, May 9, p. 1032), haemolytic disease is uncommon in a first-born child, especially in the absence of a previous blood transfusion or abortion, although many more cases in all probability exist than are reported. There has recently been under the care of one of us (J. D. M. L.) a patient whose child was severely affected and in whom no certain evidence of antigenic stimulus could for a long time be elicited.

The patient was 28 years old, and was delivered of a stillborn slightly macerated first-born male child of 7½ lb. (3.38 kg.) weight after a somewhat prolonged labour in the thirty-ninth week of pregnancy. During the fourteenth week the mother lost about an ounce (30 g.) of blood per vaginam. Her hands and ankles became swollen in the thirty-third week, and her weight showed a rapid increase. A slight hypertension (160/105 mm. Hg) developed at this time, without albuminuria. Routine blood grouping was performed for the first time in the thirty-seventh week. The patient was found to be Group O Rh (D) negative. Pure anti-D antibodies were detected in her serum (saline titre 1/4, albumin titre 1/64). The father's blood group was O Rh (D) positive, his probable genotype being CDe/CDe (R_1R_1). The infant's cord blood haemoglobin was 49% (Haldane) and his blood group was O Rh (D) positive. The direct Race–Coombs test was positive, and his serum contained an albumin operating antibody agglutinating Group O R_1R_2 cells. A stained blood film showed a very large number of nucleated red cells, and necropsy confirmed the diagnosis of erythroblastosis foetalis.

The patient was an extremely intelligent and good witness, and was emphatic for some time in her denials of any previous menstrual irregularity or blood transfusion which might have formed the basis of a rhesus antigenic stimulus. Eventually, however, she recollected that 18 years previously she had received an intramuscular injection of about 10 ml. of blood from her brother who was convalescent from measles, so that she might receive some measure of protection herself. Her brother's blood group has since been examined and has been found to be O Rh (D) positive. It appears likely, therefore, that this remote therapeutic measure initiated the rhesus antibody response which later was to have so disastrous an effect. It is possible that the slight threatened abortion enhanced the secondary antigenic stimulus. The manner of obtaining the vital 18-year-old evidence serves to emphasize the caution with which negative findings must always be treated.

Our thanks are due to Drs. A. E. Mourant and Dorothy Parkin, of the Blood Group Reference Laboratory, the Lister Institute, for confirming that the antibody in the patient's serum was pure anti-D, and for genotyping her husband.—We are, etc.,

J. D. M. LYTLE.
J. L. PINNIGER.
G. WETHERLEY-MEIN.

London, S.E.1.

General Peritonitis and Appendicectomy

SIR,—I disagree emphatically with the concluding sentence of the letter on general peritonitis and appendicectomy by Miss Isabella Forshall and Mr. P. P. Rickham (*Journal*, April 4, p. 782). It is quite true that removal of the appendix may be very difficult (whether peritonitis is present or not) or even impossible (I know of two such cases), and there are circumstances when the removal is inadvisable (Mr. Norman Lake's case (*Journal*, December 13, 1952, p. 1307) is an example), but the general rule nevertheless is that the appendix must be removed. The correct advice to an inexperienced operator when in doubt or difficulty is to ask for the advice or help of an experienced surgeon. The teaching that the appendix must be removed in generalized peritonitis, far from being dangerous, is based on sound grounds and is that of well-known professional teachers. As an example I would like to quote Professor Ian Aird[1]: " The mortality [of conservatively treated cases] can be further reduced, most experienced emergency surgeons feel, by removing a dangerous source of infection. One has only to see pus and faecal material oozing into the general peritoneal cavity from a perforated appendix to be certain how unequal would be the struggle of chemotherapy against such gross and continued infection. . . . In most centres, appendicectomy is regarded as an early and essential part of the management of perforative appendicitis with spreading peritonitis. . . ." I do not wish to prolong this letter and correspondence, but have no doubt that mortality from appendicitis will increase if the advice to leave the appendix in is followed.—I am, etc.,

Georgetown, British Guiana. N. N. IOVETZ-TERESHCHENKO.

REFERENCE

[1] *A Companion in Surgical Studies.* 1949. Livingstone, Edinburgh.

The Cerebrospinal Fluid Pressure

SIR,—As a result of further investigation upon cerebrospinal fluid pressure carried out since submitting my paper (*Journal*, April 18, p. 863), it has recently become obvious that certain of my conclusions require revision. I therefore welcome the proleptic criticisms of my paper in the *Journal* of May 9 (pp. 1048–9), and Mr. D. W. C. Northfield leaves no doubt, even to the most provincial, of the eminence from which he casts his criticism. I must now, with as much grace as possible, make certain admissions and withdrawals.

First, an unscientific oversight caused me to use the word " fluid " when I meant " liquid." Under physiological conditions, these latter are virtually incompressible. Secondly, my preoccupation with volume dislocations caused me to make elementary mistakes regarding pressure. Even C.S.F. cannot add one cubit to its manometric stature without

increase in pressure. What I apparently failed to make clear is that with a limited amount of fluid (about 150 ml.) at its disposal the spinal theca may find itself unable to displace enough fluid into a wide manometer to rise to a height which would be a measure of the pressure in the intact thecal sac. However, the *volume* displaced is always constant under similar conditions, because it is a measure of the increase in volume of the intradural veins.

Thirdly, I stated that partially collapsed veins can change from elliptical to circular cross-sections without increase of pressure. I should have said "with minimal increase of pressure." This was a quotation from Ryder, Molle, and Ferris,[1] whose work I originally accepted without experimental confirmation, but have since repeated. I find their observations to be true of vessels exposed to atmospheric pressure and in the horizontal position. It is not true of vertical vessels, nor of vessels in any position surrounded by a water-jacket, except under very special conditions which have not yet been fully investigated and upon which I cannot enlarge here. I must therefore withdraw the conclusion made in my paper that the intradural veins can increase in volume without increase in pressure. But when Mr. Northfield asks what increases the volume of partially collapsed veins if not increase in intravenous pressure, the answer is, quite simply, an increase in volume-flow accompanied by the minimal increase in pressure mentioned above, which, I submit, is so small as to be negligible.

As regards the elasticity of the dura, I have myself done no work on excised dura, but accept the conclusions of Weed and Flexner,[2] to which I have already referred. I would remind Mr. Northfield that the *Shorter Oxford English Dictionary* defines "elastic" as "that (which) spontaneously resumes its normal bulk or shape after contraction, dilatation or distortion by external force," as stated in the Discussion of my article. This has nothing to do with the ability to bulge, or, to quote myself, ". . . distinction between expansibility (power to undergo deformation) and elasticity (power to resist deformation)."

I must thank you, Sir, for allowing me so much space in which to reply to criticism, much of which is fully justified. I would end by restating the summary of my hypothesis: It is suggested that the resting pressure of the C.S.F. is due only to the pressure transmitted from the walls of blood vessels within the spinal and cranial subarachnoid space. Rise of pressure above the physiological norm is due to an increase of pressure and volume of these vessels, and the amount of C.S.F. displaced into a manometer is constant under given conditions, being a measure of the increase in volume of the intradural veins.—I am, etc.,

Liverpool. DAVID BOWSHER.

REFERENCES

[1] *J. clin. Invest.*, 1944, 23, 333.
[2] *Bull. Johns Hopk. Hosp.*, 1932, 50, 196.

Mental Hospital Service

SIR,—Joint consultation with doctors and all other grades of staff alone can save medical superintendency in mental hospitals. Benevolent autocracy and despotic dictatorship have outlived their value as constructive administrative forces—if indeed they ever had any.

So far as doctors are concerned the medical advisory committee should meet frequently as a sounding board of opinion and a stimulating source of suggestions. The medical advisory committee is advisory to the hospital management committee, with direct access to it. Whenever differences of opinion arise between the medical advisory committee and the medical superintendent it is of crucial importance that the medical advisory committee should feel free to go direct to the hospital management committee. Such difference of opinion should not imply disloyalty of the medical staff to the medical superintendent, nor should the latter take it as an affront should the suggestions of the medical advisory committee be accepted by the hospital management committee against his advice. The medical superintendent should be prepared to follow the lead given by the "managerial revolution" in industry—the most enlightened firms encourage joint consultation, and differences between staff and management are carried to the highest quarters without bad feelings. Such joint consultation would do much to bring the frustrations merely murmured in the medical officers' mess into more constructive open discussion with benefit to patients, staff, and medical superintendent.—I am, etc.,

Chester. I. FROST.

SIR,—As a young psychiatrist, old enough, however, to have served under the old county mental service, I should like to say how very much I am in agreement with Dr. J. C. Sawle Thomas's letter (*Journal*, May 2, p. 992). I have recently spent three years as an Army psychiatrist working in a hospital, prior to returning to a mental hospital post under the National Health Service, and am disheartened and amazed at the present prevailing conditions. Indeed, no longer is the superintendent to be considered captain of a happy ship. I have noticed the considerable friction that has arisen between lay administrators and medical staff. If it were not for the fact that it appears to be a common experience to all psychiatrists, old and young, I might have felt that my dissatisfaction lay in my own attitude. However, it appears that the divided authority and general inefficiency and tardiness in getting things done are all too common.

At times the attitude of the administrators, many of whom have had relatively little experience of mental hospital work, to the senior medical staff amounts to almost flagrant discourtesy. In my opinion it is not so much a matter of personalities as the fact that the whole machinery of hospital administration is unrealistic and cumbersome, owing perhaps to the attitude that no one should be allowed to have full responsibility. Many management committees, whose members consist of public-spirited people, are doing their best under most trying and frustrating circumstances. No doubt this frustration is felt more acutely in a mental hospital, where, as Dr. Thomas says, it is of paramount importance that one individual should be wholly responsible for his hospital.—I am, etc.,

Burley-in-Wharfedale. HUMPHRY B. KIDD.

Limb Injuries in Coal-miners

SIR,—I had occasion last year to make an investigation of the medical causes of absence from work of coal-miners in a small colliery and to write an unpublished essay thereon. My analysis of the injuries sustained in nine months showed injuries to the following parts of the body in the percentages noted: head and neck, 7%; body, 20%; shoulder and upper limb (41%) and lower limb (32%), 73%. That is, three-quarters of the total injuries were limb injuries. Even in war only about 50% of the total injuries are limb injuries, so this is an exceptionally high figure. The injuries were not all necessarily severe—for example, broken legs or arms—but they were sufficient to put the men off work.

It would be interesting to know if this high percentage of limb injuries is representative of the country's coal-mines as a whole. If it is, it would appear that limb injury is the crux of the whole problem of miners' accidents, and a most serious cause of loss of production. I believe there are about 250,000 accidents per year amongst about 700,000 miners, so one could assume that about 180,000 limb injuries of some degree are suffered by miners each year. This would be a startling and appalling figure if such is the case.

My impression, therefore, is that urgent technical research focused on this vital and important matter of the prevention of arm and leg injuries in miners would not only save much individual suffering, but would pay the country hands down in increased coal production, and in preserving our skilled manpower over the years.—I am, etc.,

Herne Bay, Kent. C. T. H. WHITESIDE.

Anticoagulants in Myocardial Infarction

SIR,—Mr. John Fry (*Journal*, May 16, p. 1109) wonders if hospital figures and reports depict the true natural history of coronary infarction or represent only selected cases of serious degree. He examines the figures for three years in his own practice and finds them within the range of hospital reports. This could be a start of a useful piece of work, if a number of general practitioners would contribute their experiences and pool the results. I commend this idea to the College of General Practitioners.

Mr. Fry reports 44 cases seen in three years of whom 17 are now dead. Of his cases, 9 were sudden deaths, leaving a mortality of 8 out of 35 cases receiving treatment. He did not use anticoagulant treatment. In three years I have seen 38 cases of coronary infarction with three sudden deaths. The remaining 35 are all alive except 2; 1 died two years after his thrombosis from a stroke, and 1 had a further infarct a year later. They all had anticoagulant treatment as I have described in the *Lancet*.[1]

Though I believe the anticoagulant treatment to be of great importance, I agree with Gilchrist[2] that the chief cause of death in the first day or two after coronary infarction is shock. I wonder if we, as general practitioners, treat the shock of infarction sufficiently seriously. In the first day or two after coronary infarction there is no weakening of the heart muscle, and stimulation can be given freely. In addition to the physical treatment of shock, I give leptazol-ephedrine in 1-ml. doses as often as hourly, if necessary. I suppose a theoretical result of stimulation might be to dislodge part of a thrombus and produce a pulmonary embolism, but I have never seen this happen, and in any case it is better to have a pulmonary embolism to deal with than a patient dead from lack of stimulation.—I am, etc.,

Leeds. R. A. MURRAY SCOTT.

REFERENCES

[1] *Lancet*, 1952, 1, 488.
[2] *British Medical Journal*, 1952, 2, 351.

SIR,—Mr. John Fry's letter (*Journal*, May 16, p. 1109) raises some very pertinent points, and I entirely agree with him that, if anticoagulant therapy has been conclusively shown to benefit certain types of myocardial infarction, then its use could well be extended (where laboratory facilities are available) to general practice.

I am not sure, however, that the disease as seen in hospital is exactly the same as in general practice. My own experience over the last three years tallies closely with Mr. Fry's. In a rather smaller and more rural practice I had 26 cases occur in 21 people; ten of these were fatal, of which five were sudden deaths. Omitting these last, this gives a mortality of 24%. If Mr. Fry's and my very similar experiences are representative, then surely the mortality of cases treated at home is less than of those treated without anticoagulants in hospital? In other words, the average severity of hospital cases is likely to be greater, as indeed one would expect. In view of this the need of a basis for selecting those cases most suitable for domiciliary anticoagulants is all the more necessary. Without it, it seems doubtful to me whether a sufficient improvement in the prognosis will be obtained to offset the risks and labour of its routine use.—I am, etc.,

Shrewsbury. JOHN C. RYLE.

The Foley Catheter

SIR,—Mr. Paul Houghton (*Journal*, May 2, p. 994) has drawn attention to the value of the Foley catheter in cases of uretero-colic anastomosis. I first realized the potential uses of the Foley catheter in rectal surgery when in May, 1950, I was faced with the extremely unusual and troublesome problem of a chronic fissure in ano presenting as a late complication of uretero-colic anastomosis. In 1936 bilateral uretero-colic anastomosis was performed by the late Mr. Butler at St. Luke's Hospital on a young woman because of a very large high vesico-vaginal fistula, a result of obstructed labour. After 14 years of good health she developed classical symptoms and signs of fissure in ano. Her pain, however, appeared to be even more severe than is usual, owing doubtless to the action of the urine on the fissure. After excision of the fissure her relief from pain was marred by her total incontinence of urine mixed with faeces.

I found that a No. 24 Foley catheter with a 30 ml. bag distended with water drained the rectal contents into a receiver beside the bed with relative efficiency. Anal control returned at the sixth day, and the residual stress incontinence cleared during the fifth week. Incidentally, a carcinoma developed in the non-functioning bladder in 1952, sixteen years after the uretero-colic anastomosis was done.

Since 1950 my colleagues in Guildford have used the Foley catheter in the rectum after uretero-colic anastomosis until the patient has obtained voluntary control. This catheter in the rectum is also very much welcomed by patient and nursing staff in the occasional very severe post-ileus diarrhoea in which there is total incontinence of profuse, extremely offensive liquid stools.

There remains a warning against one disadvantage of the Foley catheter. Just as the tip of the catheter can ulcerate through the roof of the bladder if used for continuous drainage (the bladder should always be allowed to fill and be emptied at intervals by removing the spigot), so, in the female, the tip may ulcerate through the anterior rectal wall, causing a low recto-vaginal fistula. This can be avoided by strapping the catheter to the front of the thigh for a part of the day. In this way the tip of the catheter is rotated posteriorly towards the hollow of the sacrum.—I am, etc.,

Guildford. TERENCE P. N. JENKINS.

Bohn's Exercise Test in Persistent Ductus Arteriosus

SIR,—In his paper on persistent ductus arteriosus (*Journal*, May 2, p. 971), Dr. F. Starer writes: "The exercise test (Bohn, 1938) was carried out in 11 instances only, and produced a diastolic fall in eight and a rise in two. In one case the response was variable. This suggests that, although the test is not infallible, it is a useful means of confirming the diagnosis."

Surely the time has come for Bohn's exercise test to be abandoned as a time-consuming manœuvre which can only hinder accurate clinical diagnosis? Although the test may afford some measure of a patient's gymnastic ability, the fact that it is performed at all gives an indication of the size of the scotoma in the mind of the observer for what constitutes a normal response of the blood pressure to exercise.

Those who still carry out this test in suspected cases of ductal patency must surely be unaware that a fall in diastolic pressure after exercise is a normal response—an observation which has been repeatedly demonstrated by physiologists in the past.[1 2 3 4] Furthermore, the fall of the diastolic pressure in health may be profound. Amongst 2,000 aviators submitted to a brisk stepping test, Schneider and Truesdell[5] found that the diastolic pressure fell in 45% (by 2–40 mm. Hg), that it rose in 23% (2–20 mm. Hg), and that in 32% it remained unchanged. My own findings[6] in 100 normal subjects were comparable: a fall in 37% (5–25 mm. Hg), a rise in 36% (5–20 mm. Hg), and no change in 27%. When observations on the Bohn test were controlled, analysis of the results showed that neither the frequency nor the extent of the fall in diastolic pressure was greater in patent ductus as compared with normal subjects. Perhaps the most convincing evidence of the unreliability of the exercise test in diagnosis is that controlled intra-arterial blood pressure measurements show a rise in diastolic pressure in patent ductus after exercise, and a fall in healthy subjects[7]—in fact the opposite to what most published observations on the exercise test would lead one to believe.

No; the widespread support the Bohn test has enjoyed has been misplaced. Had Bohn's claims been approached

more critically by clinicians, and had controlled observations of the effect of exercise on the blood pressure of normal subjects been the yardstick against which the test was measured, the exercise test would have been discarded long ago.

May I, in conclusion, recall the words of Sir Thomas Lewis,[9] which should be remembered by all who are anxious to record and to interpret accurately new clinical observations? "Medical men are insufficiently conversant with what constitutes normality in the human being. They regard as pathological many phenomena which are in reality not only compatible with health, but are actually physiological. . . . Any departures from a single physiological standard come inevitably to be regarded as abnormal; busy medical men have no time to seek for and to study controls; for the most part they leave the physiological study of man when they leave the physiological laboratory and the lecture theatre. The result is that normality in man is often far more elementary than it has business to be."—I am, etc.,

Bedford. DAVID LEWES.

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Modern Treatment

SIR,—The comments of Mr. Michael Smyth, Dr. Thomas Fentem, and Dr. H. M. Flanagan on the use of initials and the extent to which they lessen the value of the *Journal's* articles to the older generation (*Journal*, April 11, pp. 835–6) are beautifully illustrated in the second line of the next following letter (at p. 836) on "An Unusual Case of Chickenpox," by Dr. James A. Petrie of the "Lang Toon."

A.P.T.—my dictionary (an American) gives the meaning of a great many of the commonly used initials, but does not give this one. That suggests to me that there is another obscuring factor in this use of initials. They may be restricted in use to a given locality, and may be in quite common use on one side of the herring-pond and unintelligible on the other; to graduates of one school and not to those of another.

As an examiner for many years of papers in the examination for registration I was frequently unable to interpret the initials used by candidates. As a sufferer from "initials," I, too, am glad with Dr. Fentem to be "in this, in such good company."—I am, etc.,

St. John's, Newfoundland. CLUNY MACPHERSON.

Treatment of Poliomyelitis

SIR,—My experience of giving double maximum doses of strychnine to cases of poliomyelitis may be of interest. The strychnine is given as soon as the paralysis shows clinical evidence of the diagnosis. The dosage is double maximum relative to the age of the patient. The maximum dose for adults is taken as 8 min. of a 1% solution; this would be counted as double maximum dose for a child of 8 years. The strychnine is given orally, and in order to make it acceptable it is mixed with aspirin, water, and syrup of tolu. All but one patient took the mixture easily.

The rationale of the treatment is that, though paralysis has occurred and the neurones have ceased to function, this does not prove that the neurones are actually dead. They may be dying from the effects of toxic saturation which will result in death unless a powerful stimulus can put a new kick into them. This expectation is made more hopeful by our knowledge that once paralysis has happened the virus activity of poliomyelitis ceases. This argument applies both to the flaccid, or atonic, and to the spastic forms of the paralysis, because the spasticity is itself a witness that the neurones are not dead. The argument, therefore, that spastic paralysis should be treated with sedatives and the like is fallacious. Although an irritative condition, spastic paralysis due to poliomyelitis should be treated with strychnine, for we are dealing essentially with a neurone degeneration and not with a muscular condition. The neurone condition is one of exhaustion leading on to a quick death. Speed is the essence of success while the neurones are alive. It is a matter of hours, not days.

Of the 13 cases of poliomyelitis that have occurred in my practice since 1929, 12 have been treated with double maximum doses of strychnine. The one not treated suffers from permanent paralysis (the parents did not give the medicine). One was sent to hospital and returned after weeks with a paralysed left arm raised and splinted. Double maximum doses of strychnine given for six weeks failed to improve the condition. It was too late. Every one of the remaining 11 cases between the ages of 1½ and 12 years recovered completely. Five were flaccid and six were spastic cases. Five were cured in two days, two in three days, and three in less than one week. One was cured in one day.

I cannot believe that these results are due to a strange run of fortune or coincidence. But, to clinch the issue, I do hope that others will be stimulated to give the method a trial.—I am, etc.,

London, S.E.25. J. C. JONES.

Television and the Patient

SIR,—I have been interested in the correspondence on this matter and I find myself very much in agreement with Dr. Trevor Hughes (*Journal*, April 18, p. 884) and Dr. A. Dalby (*Journal*, May 2, p. 995). Also, as a consultant anaesthetist myself, I largely agree with Dr. I. W. Magill (to whom I owe a great deal professionally and also personally, although he may not know it).

I feel, however, that Dr. Magill has missed the point of Dr. Hughes's letter and is really putting across further propaganda. We must remember that "intelligence" in medical matters in the lay public is very nearly a negative quantity. Think of the debates in the House of Commons, and consider Dr. Hughes's experience with the B.B.C.

Again, even rag and bottle methods can be quite pleasant and very safe, with ether alone, in the hands of competent anaesthetists. I should be very surprised if Dr. Magill himself was not brought up "on the bottle" as I was, only my bottle contained chloroform, a thing for which I am grateful as it taught me the most important thing in work and play —"Keep your eye on the ball."—I am, etc.,

Richmond, Yorks. R. K. ROBERTSON.

To Drain or Not to Drain?

SIR,—The above is the question which has exercised the minds and proved the judgment of surgeons for many years. Is it conceit or faulty judgment regarding their technical skill, or watertight sutures, or is it a sublime faith in the avoidance of infection, or a fear of future adhesions, or the use of antibiotics, etc., that deter them from inserting a drain? During some forty years of active surgery I have occasionally regretted the absence of drainage but never its use in such cases as thyroidectomy, appendix abscess, cholecystectomy, drainage of the common bile duct, and partial gastrectomy when the duodenal closure does not look too secure, etc. What harm results from drainage in abdominal surgery? The reply may be "adhesions," but how often does one *not* find omental adhesions on opening an abdomen a second or third time, and whether or not drainage has been employed?

Mr. Rodney Maingot (*Journal*, May 9, p. 1047) describes his modification of the Kehr and Cattell tubes, and its employment in certain conditions. May I suggest that the cross-limb should be perforated in order to prevent blockage by a missed stone or inspissated bile, and that an additional tube be inserted down to the opening in the common duct—a safety valve in case of leakage? The sphincter of Oddi is provided by Nature for a specific purpose—to prevent reflux from the duodenum. Why render it incompetent any more than one would do with the lower ends of the ureters?—I am, etc.,

Dundee. F. R. BROWN.

Obituary

The death of Dr. ALBERT COLEMAN was recorded in the *Journal* of May 2 (p. 1000). We are indebted to Dr. J. NEWTON HUDSON for the following appreciation: The death of my lifelong friend, Dr. A. Coleman, at so early an age will cause grief to all who knew him, for one of his most outstanding characteristics was his capacity of inspiring affection. He was a man of great brilliance, but his brilliance never dazzled the eyes. On almost any subject he was able to converse with ease because he was possessed of a wide knowledge and was widely read, besides being a very considerable classical scholar. He was a physician of outstanding ability and an anaesthetist of the first rank, but he was always willing to place his wisdom and experience at the disposal of those who considered themselves his inferiors: yet never for an instant did he give the impression that he thought them so. Everything that he did—and his interests were manifold and varied—he did not only well but supremely well, largely because of the scrupulous care which he brought to every activity, whether work or play. There was only one thing which he did not like—which in fact he hated—and that was authoritarianism and its handmaid bureaucracy. This made him hold very strong views on the National Health Service, for he loved freedom. He had been educated in Manchester, where at the Manchester Grammar School and later at the University the great liberal principles had been inculcated in him from his earliest years. His last illness was long and painful, and the patience with which he bore his suffering, and his unfailing consideration for those who ministered to him, will long remain an inspiration to all who witnessed them. His never-failing kindness bore testimony to his adherence to the Christian faith, and the manner of his death was by no means unworthy of it. Those of us who will miss his wise and humorous presence so much can only guess at the void that his death will leave in the lives of his wife and two daughters, but our sympathies will always be with them.

We record with regret the sudden death of Dr. T. W. STEWART at his home at Harrow-on-the-Hill on April 20 at the age of 61. Thomas Wyper Stewart was born at Hamilton, Lanarkshire, on April 16, 1892, and was educated at St. Mungo's College, Glasgow, and at the University of Glasgow. After a brief period of employment in the bacteriology section of Glasgow health department, he became interested in medicine and began his medical studies while still working as a bacteriologist. He took the Scottish triple qualification in 1920 at the age of 27, and in the course of his medical career became well known and loved by patients in several parts of the country. After a short period as assistant to his brother at Nelson, Lancashire, Dr. Stewart was appointed medical officer of health for the Isle of Tiree, in the Western Hebrides. For seven years he was the only doctor on the island, which is a six-hour journey by sea—when the sea is not too rough. There he had the valuable experience of handling every medical situation unaided, and he came to be greatly respected and revered by the islanders. His account of his experiences on Tiree, told with a racy Scottish wit, were a source of delight to his younger colleagues. Having a limited knowledge of Gaelic, he once informed a patient that she had given birth to a fine cockerel—a lad who, needless to say, was known thereafter by this pseudonym. Anxious as he always was to keep in touch with modern medical developments, Dr. Stewart returned to the mainland to enter general practice, first at Easdale, Oban, and then in 1929 he settled at Accrington, Lancashire. Nine years later he came south to Whiteparish, near Salisbury, before starting a new practice at Perivale, Middlesex. Owing to wartime difficulties and the serious illness of his wife, he gave up practice and accepted an appointment with the Ministry of Pensions, becoming deputy commissioner of medical services at Leeds. At the time of his death he was a senior medical officer on the staff of London Transport, which he joined just over ten years ago. In all his medical career, although his roving instinct would seldom let him settle for long, Dr. Stewart took an exceptional interest in the welfare of his patients. He was blessed with a fine sense of humour, which made him a most entertaining companion, and he always made his points with a deftness of wit which earned him admiration and respect. He was more sensitive than appeared on the surface and was essentially a shy man. A loyal and generous friend, he set an example to younger colleagues by showing the highest standards of personal and professional qualities. Dr. Stewart dreaded retirement and vowed that he would die "in harness." Happily his wishes were met, and he was actually working until the day of his death. He leaves behind a memory of devoted service which his many friends and colleagues will never forget. He married in 1912 a childhood friend, Janet Miller Dyer, daughter of Mr. and Mrs. Dyer, of Hamilton, Lanarkshire, and our deepest sympathy goes out to his widow, to his son, who is also a medical practitioner, and to his daughter.—L. G. N.

Dr. RENÉ MENDEZ died in St. Mary's Hospital, Paddington, on April 27, aged 29 years. Born at Stockwell, London, on March 12, 1924, René Leo Mendez was educated at Clapham College and at Truro School. He entered St. Mary's Hospital Medical School in October, 1942, when he was quickly recognized as a student of outstanding ability and personality. His student career was repeatedly interrupted, often for months at a time, by the distressing illness which eventually led to his death, yet he graduated M.B., B.S. from the University of London in 1948, having obtained special permission to take his final examination while an in-patient in hospital. Ill health prevented him from holding a house appointment at St. Mary's, but, having decided to take up bacteriology as a career, he started work in the Wright-Fleming Institute for Microbiology, and was working there on a grant from the Medical Research Council until a few weeks before his death. He gave an account of his work to the Royal Society of Medicine in November, 1952, in a paper on "Respiratory Infections among Families in Paddington." René Mendez was a man of many talents and wide interests, who used them to the full in the most difficult circumstances, and his clinical and laboratory work showed great promise. He was an enthusiastic and popular member of all the student societies, for he was a fine amateur actor and the accepted script writer of most hospital entertainments. His friends and colleagues will remember his unfailing zest for life and great capacity for enjoyment, his wit and humour, and above all the uncomplaining courage and faith with which he endured and accepted repeated suffering and disappointment and, finally, the knowledge that the end was near. Our sympathy goes out to his fiancée, and to his parents and sister.—J. W. L.

Dr. L. M. ROSE died after a long and painful illness on April 28 at the early age of 32. Leonard Mortimer Rose was educated at Bradford Grammar School, where he was Hastings scholar, and at Queen's College, Oxford, to which he won a scholarship in natural sciences. He continued his clinical studies at Oxford, and graduated B.M., B.Ch. in 1944. After holding a house-physicianship at the Radcliffe Infirmary he served in the Navy until 1947, first as medical officer to a minesweeping flotilla, then as a surgeon lieutenant in H.M.S. *Vanguard*. On leaving the Navy in 1947 he returned to Oxford and set out to train himself as a paediatrician, moving on from Oxford to Sheffield and finally to Birmingham, where he was paediatric registrar. He took the M.R.C.P. in 1948. Within a few months of his arrival in Birmingham his health started to deteriorate.

O. H. W. writes: Leonard Rose had an extraordinarily active and fertile brain. Despite his young age he had published a number of valuable papers, among them one on hypertension due to unilateral renal disease in childhood and one on myocarditis associated with poliomyelitis. He had made a detailed study of 100 cases of poliomyelitis

during the 1950 outbreak, and it had been his plan to write a thesis for the Oxford D.M. on this work. Toby, as he was known to his friends, had many interests outside medicine. He was extraordinarily well read (the history of the Navy was a subject he had studied in detail); he spoke several languages; he was a keen traveller; and he was an excellent raconteur and a gifted mimic. No description of Toby Rose, however short and inadequate, would do justice to the man if it failed to mention the extraordinary courage with which he bore his illness. About 12 months before his death an operation revealed the incurable nature of his illness. Within a few days of the operation he was occupied sorting out the notes of his various research projects: his sick-room was full of medical and non-medical books. He never lost his sense of humour, and to visit him in hospital was to be entertained by Toby rather than having to entertain or comfort him. When he had regained some strength after the operation he even returned for a short while to part-time medical work. Such courage is rare. There are few doctors of his age who have succeeded to the same degree in keeping up to date with medical advances and at the same time in maintaining so many non-medical interests. We extend our deepest sympathy to his parents and his brother.

We record with regret the death of Dr. H. A. MOFFAT at Hermanus, Cape Province. He was a member of a family which for four generations played a leading part in the history of Rhodesia, one of his brothers having been the second Premier of Southern Rhodesia. Henry Alford Moffat was born on November 16, 1871, at Kuruman, Bechuanaland. His grandfather, Dr. Robert Moffat, was David Livingstone's father-in-law. Henry Moffat received his medical education at Guy's Hospital and qualified M.R.C.S., L.R.C.P. in 1895. In the following year he obtained his F.R.C.S. For some time he practised at Bulawayo, and then moved to Capetown, where he became a leading surgeon. His long record of military service began in the Balkans, where he served with the Greek forces against the Turks. He also served in the South African War and in the first world war, where he took part in the South-west African and the East African campaigns, and then saw further service in France. In the last war he rejoined the Army and was in command of the military hospital at Wynberg. He was a Chevalier of the Order of the Saviour (Greece), and was awarded the D.S.O. For his service during the last war he received the O.B.E. in 1946. Elected a member of the B.M.A. in 1896, he was president of the Cape Western Branch in 1915. He became a member of the South African Medical Council in 1933.

Dr. E. H. COLEMAN died suddenly at Brixham, South Devon, on May 2 at the age of 81, and his death has caused much distress to those who knew him during his professional life in the West Midlands. Edward Hayling Coleman was born at Wolverhampton on August 20, 1871, and was educated at the grammar school there, subsequently going to St. John's College, Cambridge, and qualifying M.R.C.S., L.R.C.P. from St. George's Hospital in 1897. He then entered practice at Wolverhampton, in which he was engaged until his retirement in 1946. In 1901 he obtained the degrees of M.B., B.Chir., and nine years later he proceeded to the M.D. with a thesis on the use of vaccines in general practice. A pioneer in the early days of motoring, he was reputed to be the first medical man in the West Midlands to drive a motor-car, which he did four years before the introduction of number plates. He was elected an assistant physician to what is now the Royal Hospital, Wolverhampton, in 1908, and later became full physician. Here he was in a line of family succession, for his grandfather had been surgeon to the institution and was famous for his participation in the initial stages of the use of nitrous oxide in anaesthesia, and also for his work in the cholera epidemic at Bilston. His father was also a surgeon to the institution. Dr. Coleman's tastes, however, lay in the direction of medicine; here he was a very successful practitioner whose mind retained its sense of curiosity to the end, and in the field of therapeutics before the days of antibiotics he showed an inexhaustible fertility.

J. H. S. writes: As with so many successful practitioners of the difficult art of medicine, Dr. Coleman's hold on his patients and the affectionate regard in which he was held by his colleagues was due essentially to his distinction of character, for he was in truth "a verray parfit gentil knight." In the course of the thirty-three years in which I knew him he was never once in a bad temper; he never ceased to believe that the world was as honest as he was; and he was one of those exemplars of our profession who literally do spend themselves in the service of their patients. Indeed he served his generation well. Perhaps his generosity of spirit was most manifest in the help he constantly tendered to his younger colleagues; as a successful practitioner who might so naturally have sought in consultation those of equal seniority, he invariably did all he could to encourage and help the younger consultants, and I shall always regard his memory with affectionate gratitude. He leaves a son, the fourth in direct line to be in practice in Wolverhampton and associated with the hospital.

We record with regret the death of Dr. THOMAS ADAM, formerly medical officer of health for Stirlingshire, at Glasgow on May 2 at the age of 86. Thomas Adam was born at Denny, Stirlingshire, on November 26, 1866. He graduated M.A. at the University of Glasgow in 1894 and became a schoolmaster for a short time, but he soon decided that he wished to make medicine his real career and became a medical student at Sheffield, qualifying by taking the M.R.C.S., L.R.C.P. in 1901. Thereafter he volunteered for service in the war in South Africa, where he was a civil surgeon attached to a flying column for 15 months. After the war Dr. Adam returned to Glasgow and entered the public health department as senior assistant bacteriologist, later becoming assistant medical officer of health under the late Dr. A. K. Chalmers. While working in the Glasgow public health service, in which he had the advantage of passing through all the departments, including the fever hospital, he obtained the Cambridge D.P.H. in 1903. Seven years later he took the degrees of M.B., B.Ch. of the University of Glasgow, proceeding to the M.D. in the same year and receiving a high commendation for his thesis, which contained a life table for Scotland based on the statistics for the years 1891–1900. From Glasgow he moved to Yorkshire, where he was senior assistant county medical officer for the West Riding for three and a half years. In May, 1912, Dr. Adam was appointed medical officer of health for Stirlingshire, a position he held until he retired in 1937. During those 25 years he became keenly interested in the treatment and prevention of tuberculosis. He realized that poor housing in the county helped to spread the disease and also made its eradication more difficult: accordingly he did all he could to expedite the housing programme in the area, and took a leading part in the preparations for the building of the model village at Westquarter. In all the years he was county medical officer Dr. Adam constantly stressed the need for co-operation between the family doctor and the public authorities in all matters affecting the health of the people. He was instrumental in opening Bannockburn Hospital in 1912, and was largely responsible for the inauguration of the first maternity and child welfare scheme at the Royal Infirmaries at Stirling and Falkirk. For six years he was external examiner in public health for the University of Glasgow. He was honoured by his colleagues by being appointed president of the Society of Medical Officers of Health for Scotland and president of the Stirling Branch of the British Medical Association. He was also a former honorary sheriff-substitute of Stirlingshire. Although in retirement when war broke out in 1939 he became president of the medical recruiting board of the Stirling area, and held the appointment throughout the war. His wife predeceased him, and he is survived by two daughters. —H. R. MACL.

Medical Notes in Parliament

Pneumoconiosis Clinics

Mr. IAIN MACLEOD stated in reply to Dr. Barnet Stross on May 14 that at the end of 1952 there were 590 chest clinics in the National Health Service, in addition to the ordinary hospital out-patient clinics, at any of which patients could obtain the recognized palliative and symptomatic treatment for pneumoconiosis. He understood that treatment by means of the inhalation of aluminium powder was being investigated by the Medical Research Council, but that the results were not yet available. He had no intention of discontinuing or reducing the clinic service.

Fewer Abdominal Supports

Mr. IAIN MACLEOD informed Dr. Barnet Stross on May 14 that in the last six months of 1951 the number of surgical abdominal supports issued in England and Wales was 52,435, and that for the last six months of 1952 it was 29,549. Dr. STROSS commented that this was a very remarkable fall, and asked whether the Minister should not now reconsider whether these supports should be issued free of charge. Mr. MACLEOD replied that in the six months before the charges were introduced a marked decline was shown, although he agreed that it was nothing like that of the six months after the charge.

Influenza Vaccine Trial

Mr. IAIN MACLEOD stated in answer to Mr. Dodds on May 14 that the trial of an influenza vaccine was extended to March 31, and the results were now being studied in detail by the Medical Research Council. He would prefer to await a full statistical report before commenting on the value of the experiment. Unfortunately, he added, at all these trials there was a low rate of influenza among both the trial and the control groups, so the information was nothing like as adequate as they would have liked.

Condition of Surgeries

Miss PAT HORNSBY-SMITH, Parliamentary Secretary, Ministry of Health, stated in reply to Mr. A. Blenkinsop on May 21 that discussions with representatives of the medical profession about improvements in the conditions and equipments of surgeries and waiting-rooms had not yet been concluded. Mr. BLENKINSOP said that considerable sums were being paid to the medical profession, in arrears on the Danckwerts award for example, and it was important that a decision should be reached without delay, while the profession still had some of the cash in their pockets. Miss HORNSBY-SMITH agreed that it was important, but the B.M.A. had agreed that it should be discussed with the problem of group practice at present under discussion.

N.H.S. Consultants

Mr. KENNETH ROBINSON asked the Minister of Health how many part-time consultants engaged for the maximum number of sessions and how many whole-time consultants were employed in the National Health Service at the latest convenient date; and the corresponding figures for 1950 and 1951.

Mr. IAIN MACLEOD informed him on May 21 that the number of whole-time consultants in England and Wales at December 31, 1952, was 1,800. The corresponding numbers for 1950 and 1951 were 1,529 and 1,650. Information about the numbers of part-time consultants doing maximum sessions was not available. Mr. ROBINSON pressed that the information should be obtained, because, he said, there were indications of a disturbing trend away from whole-time to part-time consultants. There were strong financial inducements to transfer from whole-time to part-time service. Mr. MACLEOD said the trend might be true in a particular region, but it was not true of the country. The percentage of whole-time specialists among consultants had climbed steadily in each of the past three years. There had been an increase in the number of part-timers, but the percentage was less than the increase of whole-timers.

Physiotherapists' Qualifications

Mr. A. BLENKINSOP asked the Minister of Health why he proposed to disregard the recommendations of the Cope Committee regarding the employment of physiotherapists in hospitals.

Mr. IAIN MACLEOD replied on May 21 that in making regulations prescribing qualifications for medical auxiliaries for employment in the National Health Service he proposed to have full regard to the recommendations of the Cope Committee, except that, for the reason he gave on March 19, there would be no statutory registration. [The reason then given was that "there is insufficient agreement on fundamental matters."]

Civil Service Vacancies

Dr. A. D. D. BROUGHTON asked the Secretary to the Treasury what information he had received from the British Medical Association with regard to its refusal to publish advertisements of vacant medical appointments in the Civil Service; what was the subject at issue that had given rise to this decision; and what action he was taking to remedy the situation.

Mr. J. A. BOYD-CARPENTER replied on May 22 that the B.M.A. indicated some time ago that, if advertisements of these posts were offered for insertion in the *British Medical Journal*, they would not be accepted, and he received on May 7 a letter from the Association saying that they still adhered to that decision. Vacancies were not now being advertised, and therefore no question of refusal to insert advertisements at present arose. The reason, he understood, for the B.M.A.'s attitude was that they did not regard as satisfactory the present salaries, which were those recommended by an independent committee under Sir Harold Howitt's chairmanship in 1951. He had discussed the matter several times with a joint committee of the B.M.A., the Medical Staff Association of the Ministry of Health, and the Institution of Professional Civil Servants, and he had offered to reconvene the Howitt Committee to review the present salaries. This offer was rejected. He had made other suggestions for settling this matter, but so far without result.

Medico-Legal

DRUGS AND SELF-SERVICE

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

By the Pharmacy and Poisons Act of 1933 the sale of poisons included in Part I of the Poisons List is forbidden unless by or under the supervision of a registered pharmacist.

Boots Cash Chemists (Southern) Ltd. instituted a self-service scheme in their Edgware shop by which proprietary drugs containing very small quantities of poisons included in Part I of the List were displayed in the shop. Customers collected them from the shelves and brought them to the cashier's desk in the manner familiar from the cafeteria style of tea-shop. At the cashier's desk was a qualified pharmacist whose duty it was to scrutinize what the customer had collected from the shelf.

On February 5 the Court of Appeal dismissed[1] an appeal by the Pharmaceutical Society of Great Britain from a decision of the Lord Chief Justice that this was not a breach of the provisions of the section. The court held that the exposure of the drug for sale on the shelf of the shop amounted only to an invitation to do business. When the customer took the drug from the shelf, this was an offer by the customer to buy. But the contract of sale was not

[1] *The Times*, February 6.

complete until the cashier accepted that offer by taking the money. Since this process was under the scrutiny of the qualified pharmacist stationed there for the purpose, there was no contravention of the section.

Universities and Colleges

UNIVERSITY OF OXFORD

In Congregation on February 28 the degree of D.M. was conferred on D. S. Lewes.

The Radcliffe Prize has been awarded to Dr. J. G. Widdicombe, Research Fellow of Queen's College.

The George Herbert Hunt Travelling Scholarship for 1953 has been awarded to Anthony Clifford Allison, D.Phil., B.M., Fellow of Exeter College.

UNIVERSITY OF CAMBRIDGE

In Congregation on March 7 the following medical degrees were conferred:

M.D.—H. C. Churchill-Davidson, J. H. Dean, Mrs. Margaret H. Pond.

M.CHIR.—M. T. Pheils (by proxy).

M.B., B.CHIR.—J. R. Kirkup (by proxy).

The following candidates have been approved at the examination indicated:

M.CHIR.—C. G. Attenborough, M. T. Pheils, P. G. Somerville, J. P. Stephens.

Dr. Parr Tate, Reader in Parasitology in the University since 1949, has been appointed Director of the Molteno Institute of Biology and Parasitology for three years from October 1, 1952, or for so long as Professor V. B. Wigglesworth, F.R.S., is Quick Professor of Biology, whichever period is the shorter.

Dr. F. W. Campbell has been appointed a University Lecturer in Physiology, Dr. C. W. McE. Pratt a University Demonstrator in Anatomy, Dr. H. B. Barlow and Dr. R. H. Winfield University Demonstrators in Physiology, all with tenure from October 1, 1953, for three years.

Dr. J. W. Millen has been reappointed a University Lecturer in Anatomy, with tenure from October 1, 1953, to the retiring age, and Dr. J. D. Lever a University Demonstrator in Anatomy, with tenure from October, 1, 1953, for two years.

Dr. K. Bailey, who was elected a Fellow of the Royal Society in March, has been reappointed as an Assistant Director of Research in Biochemistry, with tenure from October 1, 1953, for five years.

Professor J. Z. Young, F.R.S., has been appointed Michael Perkins Lecturer for the current year.

UNIVERSITY OF GLASGOW

Mr. William Arthur Mackey has been appointed to the St. Mungo Chair of Surgery in succession to Professor J. A. G. Burton, who retires at the end of the current academic year. Mr. Mackey was educated at the University of Glasgow, graduating M.B., Ch.B., with honours, in 1927 and gaining the Brunton Memorial Prize as the most distinguished graduate in medicine of his year. Before the war he was assistant in pathology at the University and later became an assistant in the department of surgery. He was admitted a Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow in 1934 and in the following year he was elected F.R.C.S.Ed. During the war he served as a Lieutenant-Colonel in the R.A.M.C. in charge of the surgical divisions of various hospitals in Europe and the Middle East. He returned to the University after the war as assistant in surgery, and last year he was appointed surgeon in charge of wards at the Southern General Hospital, Glasgow.

UNIVERSITY OF DUBLIN

On the nomination of the University Council, Dr. J. B. Fleming has been appointed University Professor of Midwifery and Gynaecology, in succession to the late Professor O'Donel Browne. John Browne Fleming was born in 1909 and was educated at Trinity College, Dublin, graduating in medicine in 1931. He proceeded to the M.A.O., with first-class honours, in 1940 and to the M.D. in the following year, and was elected F.R.C.P.I. and M.R.C.O.G. in 1947. Professor Fleming had been Assistant to Professor O'Donel Browne since 1942, and before that he was Assistant Master at the Rotunda Hospital. At present he is Honorary Visiting Gynaecologist to the Adelaide Hospital, Dublin.

SCHOOL OF PHYSIC, TRINITY COLLEGE

The following candidates have been approved at the examination indicated:

DIPLOMA IN GYNAECOLOGY AND OBSTETRICS.—R. A. Boland, H. C. Stevenson, D. Bandyopadhyay, S. A. Aziz, A. Dhol, H. J. B. Pershad, J. E. Mohotti, H. Bahry, D. Hassan, N. Adhya, J. Abraham, S. Basu, P. Chaudhuri, P. Ray, A. Ray, M. S. Patel, G. Bheek, S. Ray, I. B. Adarker, G. Chattopadhyay, B. Ghosh, T. D. Kapadia.

UNIVERSITY OF LONDON

Dr. C. F. Harris and Professor J. Z. Young, F.R.S., are two of the representatives of the University appointed to attend the seventh quinquennial Congress of Universities of the Commonwealth to be held at Cambridge from July 13 to 17, and Professor L. S. Penrose will represent the University at the ninth International Congress of Genetics to be held at Bellagio, Italy, from August 24 to 31.

The following have been appointed or nominated for appointment or reappointment as representatives of the University on the institutions indicated in parentheses: Mr. D. F. Ellison Nash (Institute of Urology); Professor J. Z. Young, F.R.S., and Mr. R. C. Davenport (London School of Hygiene and Tropical Medicine); Professor J. M. Mackintosh (London School of Economics and Political Science); Sir Archibald Gray and Dr. C. F. Harris (School of Pharmacy); Dr. C. F. Harris (Royal College of Veterinary Surgeons); Professor L. P. Garrod (Kentish's Educational Foundation); Dr. W. K. Taylor (Pewley County Secondary School, Guildford).

The following have been recognized as teachers of the University in the subjects indicated in parentheses: *Westminster Medical School*, Dr. R. J. O'Connor (Pathology); *London Hospital Medical College*, Dr. B. F. Russell (Dermatology). *St. Thomas's Hospital Medical School*, Mr. C. H. Barnett (Anatomy). *King's College Hospital Medical School*, Dr. W. M. Davidson (Pathology (Haematology)).

The following, who are already recognized teachers at undergraduate medical schools, have been recognized also as teachers at the Institute of Neurology in the subjects indicated in parentheses: Sir W. Russell Brain, Dr. D. H. Brinton, Dr. Macdonald Critchley, Dr. Helen E. Dimsdale, Dr. R. A. Henson, Dr. Douglas McAlpine, Sir Charles P. Symonds, Dr. D. J. Williams (Neurology); Dr. J. W. D. Bull (Radiology); Mr. T. E. Cawthorne and Mr. C. S. Hallpike (Oto-rhino-laryngology); and Mr. Wylie McKissock (Neurosurgery).

Mr. S. F. Taylor, who is already recognized as a teacher of surgery at the Postgraduate Medical School of London, has been recognized also as a teacher of surgery at King's College Hospital Medical School.

The following, who are already recognized teachers at undergraduate medical schools and at a postgraduate institute, have been recognized also as teachers at the Institute of Neurology in the subjects indicated in parentheses: Dr. S. P. Meadows (Neurology); Mr. T. Keith Lyle (Ophthalmology).

The written examination for the M.B., B.S. degrees in October, 1954, will begin on the first Monday instead of the second Monday in October, that is, October 4.

The Paul Philip Reitlinger Prize for 1952 has been awarded to Dr. John Campbell Mitchell.

In Convocation on January 17 Mr. J. B. Hume, M.S., F.R.C.S., was elected a representative of the graduates in medicine on the Senate for the remainder of the period 1952–6, in place of the late Mr. P. H. Mitchiner. Mr. D. K. Mulvany and Dr. N. A. Thorne were re-elected to the Standing Committee of Convocation as representatives of the Faculty of Medicine.

The William Julius Mickle Fellowship for 1952–3 has been awarded to Dr. Charles Enrique Dent (University College Hospital Medical School) for his research on amino-acids during the past five years.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a meeting of the College on February 17, with Sir Russell Brain, President, in the chair, and in the presence of the President and Vice-Presidents of the Royal College of Surgeons of England, Surgeon Vice-Admiral Sir Kenneth Alexander Ingleby Mackenzie, Medical Director-General of the Navy, presented the Gilbert Blane Medal to Surgeon Commander H. L. Belcher, R.N.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a meeting of the Council of the College held on May 14, with Sir Cecil Wakeley, President, in the chair, Professor F. Davies (Sheffield) and Mr. J. Dobson (Wigan) were admitted to the Fellowship, having been elected as Members of the College of 20 years' standing.

A certificate of honourable mention for his Jacksonian essay was presented to Mr. Rodney Smith (St. George's).

It was reported that the Gilbert Blane Medal for 1953 had been awarded to Surgeon Captain J. G. Holmes (Alverstoke) for his work in the promotion of naval medical science and naval medical hygiene.

Mr. C. Le Q. Darcel and Dr. L. M. Franks were appointed as Imperial Cancer Research Fund Lecturers.

A resolution of condolence was passed on the death of Mr. H. S. Pendlebury (St. George's), former member of the Court of Examiners.

The Begley Prize was awarded to R. Danbury (Royal Free).

A Diploma of Fellowship was granted to K. D. Shastri (Bombay).

A diploma in Tropical Medicine and Hygiene was granted, jointly with the Royal College of Physicians of London, to I. H. T. Wilson (University College).

Hospitals were recognized under paragraph 23 of the F.R.C.S. regulations as follows: Altrincham General Hospital, *revision of recognition to read as follows*, surgical registrar for twelve months; senior house officer for six months; *from January, 1954*, junior house officer (casualty) for six months. *Cambridge Military* Hospital, Aldershot, *from January, 1954*, casualty officer (provided that it is held for six consecutive months). Ashton-under-Lyne General Hospital, senior house officer (general surgery) for six months, instead of casualty officer and orthopaedic house surgeon. Kent and Canterbury Hospital, reduction from twelve to six months in the period of recognition of the following posts, first and second house-surgeon; orthopaedic house-surgeon. St. Peter's Hospital, Chertsey, *from January, 1954*, casualty officer. Croydon General Hospital, *from January, 1954*, two casualty officers. Mayday Hospital, Croydon, increase from six to twelve months in period of recognition of two surgical registrars; *from January, 1954*, two casualty officers. West Hill Hospital, Dartford, *from January, 1954*, casualty officer. Dewsbury General Hospital, *decennial revision*, surgical registrar for six months. Staincliffe General Hospital, Dewsbury, reduction from twelve to six months in period of recognition of resident surgical officer. Doncaster Royal Infirmary, *from January, 1954*, casualty officer (registrar); second casualty officer (senior house officer). The Guest Hospital, Dudley, reduction from twelve to six months of posts already recognized, resident surgical officer, first and second house-surgeons; *from January, 1954*, casualty officer. Metropolitan Hospital, London, *revision*, three house-surgeons for six months (previously senior and two junior house-surgeons, all for twelve months); *from January, 1954*, casualty officer. Miller General Hospital, London, *additional recognition*, resident surgical officer for twelve months. St. Andrews Hospital, London, *additional recognition*, surgical registrar for twelve months. St. Olave's Hospital, London, *redesignation*, general surgical registrar has now become senior registrar; *from January, 1954*, senior house officer (casualty). Victoria Memorial Jewish Hospital, Manchester, *from January, 1954*, deputy resident surgical officer (senior house officer). Orpington Hospital, *from January, 1954*, casualty officer. Salford Royal Hospital, *revision*, senior surgical registrar for twelve months; surgical registrar (general) for twelve months; surgical registrar (neurological) for six months; two senior house-officers (general) for six months; *from January, 1954*, one senior house officer (casualty and orthopaedic). Swansea General Hospital, *from January, 1954*, casualty officer. West Bromwich and District General Hospital, *from January, 1954*, casualty officer. Wrexham and East Denbighshire War Memorial Hospital, registrar (general surgery) for twelve months; registrar (orthopaedics) for six months; two house-surgeons for six months; *from January, 1954*, casualty officer.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

At a meeting of the President and Fellows of the College held on March 6 Professor A. H. Davidson was elected King's Professor of Midwifery in the School of Physic, Ireland. Andrew Hope Davidson was born on May 29, 1895, and was educated at Omagh Academy, Dublin High School, and Trinity College, Dublin, graduating in medicine from the University of Dublin in 1917. He proceeded to the M.D. in 1920, was elected F.R.C.P.I. in 1926, and F.R.C.O.G. in 1929, being a Foundation Fellow of the latter College. He has been professor of obstetrics and gynaecology at the Royal College of Surgeons in Ireland since 1926 and gynaecologist to Sir Patrick Dun's Hospital, Dublin, since 1948.

INFECTIOUS DISEASES AND VITAL STATISTICS

Summary for British Isles for week ending **May 9** (No. 18) and corresponding week 1952.

Figures of *cases* are for the countries shown and London administrative county. Figures of *deaths* and *births* are for the 160 great towns in England and Wales (London included), London administrative county, the 17 principal towns in Scotland, the 10 principal towns in Northern Ireland, and the 14 principal towns in Eire.

A blank space denotes disease not notifiable or no return available.

The table is based on information supplied by the Registrars-General of England and Wales, Scotland, N. Ireland, and Eire, the Ministry of Health and Local Government of N. Ireland, and the Department of Health of Eire.

CASES in Countries and London	1953					1952				
	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire
Diphtheria	22	1	10	0	2	21	1	1	0	3
Dysentery	729	80	90	1	1	241	59	74	1	2
Encephalitis, acute	0	0	3	0		6	1	0	0	
Enteric fever:										
Typhoid	1	0	3	1		5	0	1	0	1
Paratyphoid	14	1	0	0		10	0	1 (B)	0	
Food-poisoning	137	25		0		95	5		2	
Infective enteritis or diarrhoea under 2 years				12	10				11	17
Measles*	9,809	369	359	262	195	4,743	222	616	188	392
Meningococcal infection	37	1	15	2		38	3	13	1	2
Ophthalmia neonatorum	46	3	3	2		36	1	9	0	
Pneumonia†	479	15	219	6	2	582	44	202	3	2
Poliomyelitis, acute:										
Paralytic	28	4	1	1	3	15	1	3	1	
Non-paralytic	10	1				9	0			
Puerperal fever§	216	29	13	2	2	254	43	9	0	
Scarlet fever	1,387	89	189	44	37	877	53	166	24	36
Tuberculosis:										
Respiratory			148	28				159	34	
Non-respiratory			27	4				40	5	
Whooping-cough	3,461	247	384	40	149	3,103	177	227	86	86

DEATHS in Great Towns	1953					1952				
	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire
Diphtheria	0	0	0		0	0	0		0	0
Dysentery	0	0				2	1		0	
Encephalitis, acute		0			0		0			0
Enteric fever	0	0	0			0	0		0	
Infective enteritis or diarrhoea under 2 years	12	2	0	2	2	9		0	0	0
Influenza	13	1	4	0	2	19	5	2	0	1
Measles		0	0		2		0		0	1
Meningococcal infection		0	0				2			
Pneumonia	164	24	15	11	11	222	31		7	7
Poliomyelitis, acute	1	0			0	1	1			0
Scarlet fever		0	0		0		0		0	0
Tuberculosis:										
Respiratory	107	14	17	1	8	133	24	17	5	10
Non-respiratory		0	3	0	0		2	1	2	3
Whooping-cough	0	0	0	0	1	4	0		0	1
Deaths 0–1 year	226	31	21	11	40	204	34	33	11	14
Deaths (excluding stillbirths)	4,921	653	581	114	187	5,174	727	514	106	154
LIVE BIRTHS	8,415	1192	917	261	440	8,070	1233	934	245	522
STILLBIRTHS	210	29	27			188	22	24		

* Measles not notifiable in Scotland, whence returns are approximate.
† Includes primary and influenzal pneumonia.
§ Includes puerperal pyrexia.

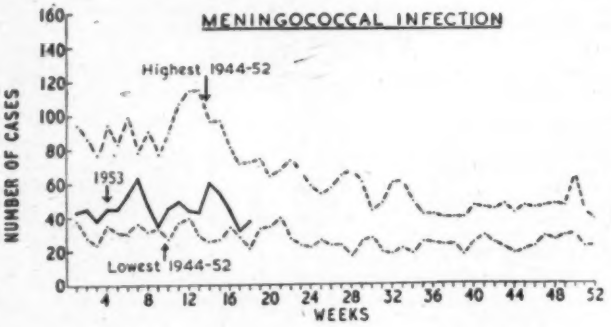
Vital Statistics

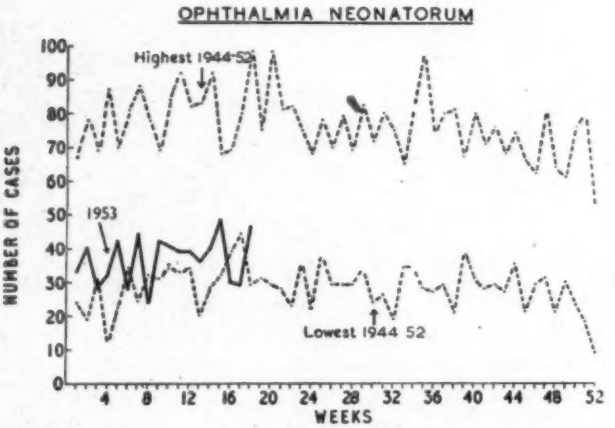
Week Ending May 16

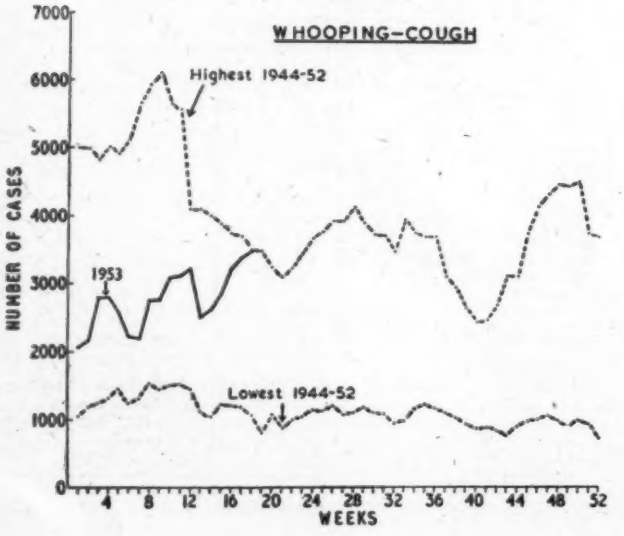
The notifications of infectious diseases in England and Wales during the week included scarlet fever 1,286, whooping-cough 3,312, diphtheria 17, measles 10,034, acute poliomyelitis 36, dysentery 736, paratyphoid fever 11, and typhoid fever 2.

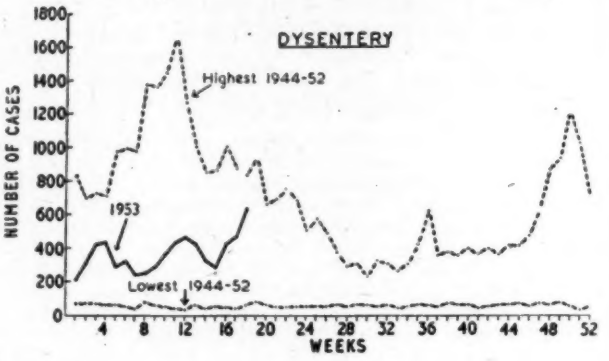
Graphs of Infectious Diseases

The graphs below show the uncorrected numbers of cases of certain diseases notified weekly in England and Wales. Highest and lowest figures reported in each week during the nine years 1944–52 are shown thus - - - - - - -, the figures for 1953 thus ————. Except for the curves showing notifications in 1953, the graphs were prepared at the Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine.









Infectious Diseases

In England and Wales during the week ending May 9 the largest increases in the number of notifications were 263 for dysentery, from 466 to 729; 248 for scarlet fever, from 1,139 to 1,387; and 88 for whooping-cough, from 3,373 to 3,461; the only large fall was 943 for measles.

The largest falls in the notifications of measles were 191 in Surrey, from 480 to 289; 179 in Staffordshire, from 543 to 364; and 104 in Southampton County, from 201 to 97; the only large exception to the declining incidence was a rise of 226 in Lancashire, from 1,191 to 1,417. The largest increase in the notifications of scarlet fever was 50 in Lancashire, from 164 to 214. The notifications of whooping-cough were the largest for two years; the largest variations in trend were a rise of 82 in Lancashire, from 449 to 531, and a fall of 62 in Surrey, from 158 to 96. 22 cases of diphtheria were notified during the week, being 9 more than in the preceding week. The chief features of the returns of diphtheria were rises from 0 to 6 in Staffordshire and from 1 to 4 in Glamorganshire.

38 cases of acute poliomyelitis were notified during the week. These were 9 more for paralytic and the same for non-paralytic cases as in the preceding week. The largest returns were Kent 8 (Beckenham M.B. 4), London 5, Warwickshire 3 (Nuneaton M.B. 2), and Lincolnshire 3.

The notifications of dysentery were the largest for two years. The chief centres of infection during the week were Lancashire 172 (Liverpool C.B. 54, Manchester C.B. 38, Preston C.B. 21, Stretford M.B. 21, Oldham C.B. 10), Middlesex 106 (Edmonton M.B. 31, Enfield U.D. 26, Southgate M.B. 17), London 80 (Kensington 16, Westminster 14, Islington 10), Norfolk 64 (Great Yarmouth C.B. 61), Bedfordshire 57 (Bedford M.B. 45), Durham 32 (Stanley U.D. 22), Yorkshire West Riding 29 (scattered over 7 administrative areas), Yorkshire North Riding 28 (Middlesbrough C.B. 28), Essex 24 (scattered through 11 areas), and Somerset (Bath C.B. 17).

The Services

Brigadier A. L. Crockford, D.S.O., O.B.E., M.C., T.D., Q.H.S., and Colonel M. MacEwan, D.S.O., O.B.E., D.F.C., T.D., have been appointed Honorary Colonels of T.A. Units, in succession to the late Major-General P. H. Mitchiner, C.B., C.B.E., T.D., and Brigadier A. A. Eagger, C.B.E., T.D., whose tenure has expired, respectively.

Brigadier (Temporary Major-General) F. C. Hilton-Sergeant, late R.A.M.C., has been appointed Honorary Physician to the Queen, in succession to Major-General A. J. Beveridge, C.B., O.B.E., M.C., late R.A.M.C., who has retired.

Lieutenant-Colonel (temporary) R. L. Marks, R.A.M.C., has been appointed O.B.E. (Military Division). The name appears in a list of awards published in a *Supplement* to the *London Gazette* in recognition of gallant and distinguished services in Korea during the period July 1 to December 31, 1952.

Major (Honorary Lieutenant-Colonel) R. A. S. Keighley, R.A.M.C., has been awarded the Territorial Efficiency Decoration.

Medical News

The Society of Apothecaries.—The Society of Apothecaries held a Livery Dinner in its hall on May 19. After the loyal toast had been honoured the master, Sir Wilson Jameson, proposed the health of the Lord Mayor and Corporation of London and the sheriffs. "You have," he said, "within the City the only corporation outside the colleges and universities licensed to qualify doctors." The Society valued the privilege of taking part in the election of the Lord Mayor and the sheriffs. In response the Lord Mayor began by saying, "Things don't matter, but people do." Speaking of the Flood Relief Fund, he said it was all going to be used for the purpose for which it was subscribed and for no other. Dr. Seaward Morley, the senior warden, dealt faithfully with the toast of the guests, and in reply Mr. Justice Danckwerts, now a popular figure at medical dinners, entertained all with legal reminiscences in support of his view that manners are now milder than they were 40 years ago. Finally, Sir Wilson, proposing "The Master's Toast," said that Sir William Gilliatt was to be made an Honorary Master of Midwifery of the Society and Sir Charles Harington was to receive the Society's Gold Medal in Therapeutics. The Wellcome Foundation had generously agreed to meet the cost of publishing a history of the Society prepared by Dr. Hector Charles Cameron from the manuscripts compiled by the late Dr. Cecil Wall.

Treasures of St. Bartholomew's Hospital.—The recent exhibition of the treasures and archives of St. Bartholomew's Hospital underlines the venerable history of our great London teaching hospitals. The earliest document shown at the exhibition was the grant of 1137 from Rahere, founder of the hospital, in which he gave St. Sepulchre's church to Hagno, who probably assisted him in the Hospital's administration. Some of the early deeds bore splendid seals: among them were the seal of London's first Mayor, the first hospital seal, and several royal seals. A particularly beautiful treasure was the fifteenth-century illuminated cartulary into which the renter, John Cok, had transcribed the hospital's charters. Henry VIII's indenture of 1546 to the City of London, refounding St. Bartholomew's, lay beside his Letters Patent endowing the hospital. In the parish records of St. Bartholomew the Less were the names of several famous inhabitants, including Dr. Lopez; Dr. Timothy Bright, the father of Inigo Jones; and Sir Thomas Bodley. Other records on view illustrated aspects of hospital life. The first payments in 1547 to surgeons of 5s. a cure were next to Percivall Pott's (1713–1788) receipts for the 6s. 8d. he was paid for each operation he performed. William Harvey's rules contained regulations long in force, and the matron's inventory of 1558 listed 77 feather beds and over 300 pairs of sheets. From the nineteenth century had been selected the notes on Elizabeth Brooker, who "had led a seafaring life and been used to drink raw rum in the West Indies." A number of bills included one for clearing the beds of bugs (1s. a bed), another for wooden limbs, and one for the magnificent ceiling of the Great Hall where the exhibition was held. One section was devoted to the eighteenth-century rebuilding by James Gibbs and another to the apothecary and his "shop." Other treasures on view were some beautiful seventeenth-century church plate, a bleeding-bowl, lunatic restrainers, and Delft ointment pots.

Radiotherapy at Cambridge.—Sir Henry Dale, O.M., F.R.S., representing the Medical Research Council, opened new laboratories at Addenbrooke's Hospital and an extension of the hospital's radiotherapeutic centre on May 15 in the presence of the Vice-Chancellor, Sir Lionel Whitby, and a distinguished gathering of guests. The principal addition is a 30-million electron volt synchrotron, provided by the Medical Research Council at a total cost of about £60,000. This instrument will be available for radiotherapy as well as research. Professor J. S. Mitchell, director of the laboratories, expressed his thanks to the Medical Research Council for the wonderful facilities they had given.

Drive Against Smallpox.—The executive board of the World Health Organization is to report to the next World Health Assembly on what steps are necessary to launch a campaign against smallpox. This was decided at a meeting of the sixth World Health Assembly in Geneva this month.

Local Medical Societies.—Recent meetings have included the following: *Manchester Medical Society.*—On April 1 Professor R. E. Lane gave as his presidential address to the Section of Medicine a discourse on the dilemma now facing the N.H.S.—how to meet unlimited demands with limited resources—and its repercussions on the doctor. He cited the rise in cost of maintaining a patient for a week at the Salford Royal Hospital from 15s. 2d. at the beginning of the century to 15 guineas now. On April 27 Professor W. I. C. Morris read a paper on "The Dramatic in Obstetrics" to the Section of General Practice. "In the first-aid treatment of severe ante-partum haemorrhage," he said, "vaginal examination or tamponage should be avoided except in the most isolated forms of medical practice. In post-partum haemorrhage, a slow steady trickle of blood is much more sinister than a forthright gushing haemorrhage." *North of England Obstetrical and Gynaecological Society.*—At a meeting on April 17 Mr. J. G. Napier described "A Fatal Case of Staphylococcal Septicaemia following Normal Delivery"; Professor A. M. Claye read a short paper on "The Evolution of a Gynaecological Hospital: the Hospital for Women at Leeds, 1853–1953"; Dr. D. H. Lees gave a short paper and film on "Transverse Incisions in Obese Gynaecological Patients," and Mr. T. F. Redman read a short paper on "Minor Degrees of Hydrocephalus as an Obstetrical Problem."

The Scottish Society of Anaesthetists held its annual meeting at Dunblane Hotel Hydro, Perthshire, from April 24 to 26. A company of 100 was present. The new executive council comprises: *president,* Dr. W. M. Shearer (Dundee); *vice-president,* Dr. I. M. C. Dewar (Glasgow); *hon. secretary,* Dr. A. G. Miller (Glasgow); *members,* Dr. T. J. C. MacDonald (Aberdeen), Dr. H. W. C. Griffiths (Edinburgh), Dr. A. Tindal (Glasgow), Dr. M. Muir (Dundee), Dr. R. Milne (Aberdeen), Dr. M. C. MacQueen (Edinburgh), and Dr. R. G. Grieve (Glasgow). Dr. Shearer, in his presidential address, discussed the pros and cons of a piped supply of oxygen and nitrous oxide in operating theatres and wards in large hospitals. Dr. I. W. Magill (London), a guest of the Society, described his impressions during a recent tour of various anaesthetic centres in the United States. The prize which the Society awards annually for the best paper submitted by a registrar was won by Dr. F. S. Preston (Glasgow).

Family Doctor.—The June issue of *Family Doctor,* which is now out, has blossomed forth into a Coronation cover of yellow, blue, green, and maroon. There are several Coronation articles: Sir Zachary Cope writes on "Queen Elizabeth I and Her Doctors," Dr. T. Traherne on "The Queen and Her People," and Dr. William Brockbank on "The Queen's Touch." Other articles on Coronation themes deal with the arrangements for the large crowds, particularly the casualties that may be expected. Medical articles include one on the rehabilitation of a little girl with infantile paralysis, and another on eczema, and there is an interesting account of a visit to the Boots factories at Beeston in Nottingham. Dr. Doris Odlum contributes an article on "Rewards and Punishments" in the upbringing of children.

Recent Medical Wills.—A bequest of £5,000 to Nottingham University towards the establishment and maintenance of a library of medical history and medical biography is contained in the will of Dr. Frank Harwood Jacob, for many years a consulting physician in Nottingham. He also left his library of books on the history of medicine and medical biography to the University. Dr. Alfred E. Evans, of Kingston-on-Thames, who died last December, left £500 to the

Royal Medical Benevolent Fund, and, after various other bequests, four-tenths of the remainder of his estate to the same fund, and one-tenth to the Royal Hospital and Home for Incurables, Putney. He left total estate of £64,596 net. Dr. J. G. G. Pigott, of Shrewsbury, who died last December, left about £5,300 (the residue of his estate after various legacies) to the Shropshire Welfare Trust "for the benefit and comforts of the patients at the Royal Salop Infirmary, the Eye, Ear, and Throat Hospital for Shropshire and Wales, and the Shirlett Sanatorium."

President of the Royal Sanitary Institute.—Lord Percy was elected president of the Royal Sanitary Institute at the annual general meeting on May 19. Lord Percy presided at the recent Health Congress at Hastings. In the past he has held the offices of Parliamentary Secretary of the Ministry of Health, President of the Board of Education, and Minister-without-portfolio. He was also Vice-Chancellor of the University of Durham.

Oliver Memorial Fund.—The Fund's committee intends making the sixth award, of the value of £50, to a British subject whose original work or services has contributed notably to the research, organization, or donor aspect of blood transfusion. The committee invites applications and, in addition, communications drawing its attention to suitable candidates. Applications must be submitted before August 31 to Mr. F. W. Mills, c/o National Provincial Bank, Ltd., Holborn Circus, London, E.C.1.

Leeds Honorary Degrees.—On June 25, on the occasion of a meeting of the British Association of Urological Surgeons, the honorary degree of D.Sc. will be conferred on Professor Charles Huggins and Mr. R. Ogier Ward. Professor Huggins has been professor of surgery in the University of Chicago since 1936. Mr. Ogier Ward is consulting surgeon to St. Peter's Hospital, London, and honorary consultant in genito-urinary surgery to the Army. He was instrumental in founding the British Association of Urological Surgeons, of which he was the first president.

Dame Hilda Lloyd, past-president of the Royal College of Obstetricians and Gynaecologists, is to receive the honorary degree of LL.D. at the summer graduation ceremony at Queen's University, Belfast.

Professor H. N. Green has been appointed professor of experimental pathology and director of cancer research in the University of Leeds from a date to be arranged. He is succeeding Professor R. D. Passey, who is retiring. Professor Green is at present professor of pathology and director of cancer research at Sheffield.

Dr. T. D. H. Perera, of Colombo, has arrived in Liverpool for an 18-months postgraduate course in thoracic surgery, under the Technical Co-operation Scheme of the Colombo Plan (see *Journal*, March 14, p. 612). After his training he will return to Ceylon.

COMING EVENTS

Monmouthshire Coronation Ball.—A pre-Coronation Ball will be held by the Monmouthshire Division of the British Medical Association at the St. Mellons County Club on June 1 at 8 p.m. Tickets (£1 7s. 6d.) may be obtained from Dr. T. R. Bryant, Glanhowy, Tredegar, Mon.

Winchester Coronation Ball.—The Winchester Division of the British Medical Association will hold a Coronation Ball in the Guildhall, Winchester, on June 11. Tickets (£1 1s.) may be obtained from the hon. secretary, St. Clements, Trafalgar Street, Winchester.

NEW ISSUES

British Journal of Ophthalmology.—The next issue (Vol. 37, No. 6) is now available. The contents include:

TOXOPLASMOSIS IN THE ADULT. Sir Stewart Duke-Elder, Norman Ashton, and M. Brihaye-van Geertruyden.
TWO PROVOCATIVE TESTS FOR GLAUCOMA. L. P. Agarwal and C. K. Sharma.
TREATMENT OF CORNEAL INFECTION WITH PS. PYOCYANEA BY SUBCONJUNCTIVAL INJECTION OF POLYMIXIN E. D. Ainslie.
STRUCTURE OF THE VITREOUS BODY. OBSERVATIONS BY MEANS OF THE PHASE-CONTRAST MICROSCOPE. A. A. Rossi.
THE CORNEAL GRAFTING ACT, 1952. B. W. Rycroft.
OCULAR COMPLICATIONS IN THALASSAEMIA MINOR. C. Rudd, P. Jameson Evans, and A. L. P. Peeney.
ACTIVITY OF THE CEREBRAL CORTEX IN AMBLYOPIA. G. Parsons-Smith.
CHRONIC PROGRESSIVE EXTERNAL OPHTHALMOPLEGIA. C. Ogren.
SUBCONJUNCTIVAL INJECTION OF POLYMYXIN B. H. Fraser.
PS. PYOCYANEUS EYE INFECTION. M. Macdonald.
RETRO-CORNEAL HYALINE BANDS IN INTERSTITIAL KERATITIS. J. Swartz.
EARLY RETINAL DETACHMENT. H. M. Symons.
VARIANT OF THE LANCASTER DIPLOPIA TEST. J. Foster.

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SOCIETIES AND LECTURES

A fee is charged or a ticket is required for attending lectures marked ●. Applications should be made first to the institution concerned.

Monday, June 1

ROYAL EYE HOSPITAL.—5 p.m., Professor A. Sorsby: Retinal Detachment.

Wednesday, June 3

POSTGRADUATE MEDICAL SCHOOL OF LONDON.—2 p.m., Dr. J. C. Broom: Leptospirosis.
ROYAL EYE HOSPITAL.—5.30 p.m., Mr. L. H. Savin: Ophthalmic Neurology.

Thursday, June 4

EDINBURGH UNIVERSITY.—At University New Buildings, 5 p.m., Dr. Douglas Guthrie: Medical Researches and Discoveries.
●HAMPSTEAD GENERAL HOSPITAL.—3 p.m., Dr. H. V. Morlock: Bronchoscopy in the Diagnosis of Pulmonary Disease; 4.15 p.m., Mr. J. Howkins: Some Aspects of Criminal Abortion.
HONYMAN GILLESPIE LECTURE.—At University New Buildings, Edinburgh, 5 p.m., Mr. G. A. Pollock: Certain Aspects of Cerebral Palsy.
LONDON JEWISH HOSPITAL MEDICAL SOCIETY.—At 11, Chandos Street, W., 8.30 p.m., Professor D. Slome: Experimental Surgery.
●POSTGRADUATE MEDICAL SCHOOL OF LONDON.—4 p.m., Dr. B. Ackner: Depression.
ROYAL EYE HOSPITAL.—5.30 p.m., Miss J. M. Dollar: Headaches and their Differential Diagnosis.
ST. ANDREWS UNIVERSITY.—At Physiology Department, Dundee, 5 p.m., Professor A. D. Peacock: Animal Parthenogenesis.
ST. GEORGE'S HOSPITAL MEDICAL SCHOOL.—5 p.m., Dr. D. Curran: Postgraduate demonstration in psychiatry.

Friday, June 5

INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. G. B. Dowling: Tuberculosis of the Skin.
●INSTITUTE OF OBSTETRICS AND GYNAECOLOGY.—At Hammersmith Hospital, 3 p.m., Mr. J. Wrigley: Problem of Dysmenorrhoea.
LONDON UNIVERSITY.—At Meyerstein Lecture Theatre, Westminster Medical School, 5 p.m., Dr. F. A. de la Balze (Buenos Aires): Morphology and Histochemistry of Normal Adult Testes Changes under Oestrogen Therapy.
POSTGRADUATE MEDICAL SCHOOL OF LONDON.—2 p.m., Mr. W. R. Merrington: Carcinoma of the Breast.
●POSTGRADUATE MEDICAL SCHOOL OF LONDON.—4 p.m., Professor R. Kark (Illinois): Albumen Exchange in Health and Cirrhosis.
ROYAL SANITARY INSTITUTE.—At Queen's Hall, Market Street, Wigan, 10 a.m., Dr. M. T. Parker: Staphylococcal Food-poisoning in the Manchester Area; Mr. Clive Walker: Changing Pattern of Refuse Disposal and its Effect on Vehicle Design. Afternoon: visit.
WHIPPS CROSS HOSPITAL MEDICAL SOCIETY.—8.30 p.m., Dr. C. L. Cope: Adaption Syndrome.

Saturday, June 6

●INSTITUTE OF OBSTETRICS AND GYNAECOLOGY.—At Chelsea Hospital for Women, 10 a.m., Joseph Price Oration Lecture by Mr. C. MacIntosh Marshall.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Gambier.—On May 3, 1953, at the Berresford Memorial Hospital, Maua, Meru, Kenya, to Gwyneth (formerly Broom), wife of Dr. Donald M. Gambier, a son—Andrew Morley.
Marsh.—On May 15, 1953, at the Clarence Nursing Home, Tunbridge Wells, Kent, to Bobbie, wife of Dr. Alan Marsh, a sister for Susan and Michael—Amanda.
Sapier.—On May 9, 1953, at the Princess Royal Maternity Home, Huddersfield, Yorks, to Dr. and Mrs. N. V. Sapier, of Woodland House, Longwood, Huddersfield, twin daughters.
Watson.—On May 19, 1953, at the City Maternity Hospital, Gloucester, to Barbara, M.B., Ch.B. (formerly Leach), wife of David A. Watson, M.R.C.V.S., of 18, Denmark Road, Gloucester, a daughter—Sally-Ann.

DEATHS

Adam.—On May 2, 1953, in a nursing-home, Glasgow, Thomas Adam, M.D., D.P.H., of 3, Balmoral Place, Stirling, aged 86.
Allison.—On April 30, 1953, in hospital, Oswald Roy Allison, M.B., Ch.B., B.D.S., of "Foye," Manchester Road, Altrincham, Cheshire.
Pollard.—On April 21, 1953, at "Brentwood," 977, Scott Hall Road, Moortown, Leeds, Yorks, Percival Pollard, M.B., Ch.B., aged 76.
Smith.—On April 19, 1953, William Steele Smith, M.B., D.P.H., aged 81.
Stewart.—On April 20, 1953, at his home, 3, Lowlands Court, Lowlands Road, Harrow-on-the-Hill, Middlesex, Thomas Wyper Stewart, L.R.C.P.& S.Ed., L.R.F.P.S., aged 61.
Thomson.—On April 29, 1953, at Carnegie House, Montrose, Forfarshire, James Ettershank Gordon Thomson, M.C., M.B., Ch.B., late of Arbroath.
Turner.—On April 19, 1953, at Birmingham, Henry Nisbet Turner, M.B., Ch.B., late of The Manor House, Castle Bytham, Lincs.
Wright.—On April 23, 1953, at his home, 30, Clarence Terrace, Bollington, Macclesfield, Cheshire, James Alexander Wright, M.B., Ch.B., aged 24.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Prolapse in Young Women

Q.—*Is it worth carrying out an operative repair in young women with prolapse, or does the likelihood of further pregnancies make this a waste of time?*

A.—Youth and the possibility of further childbearing do not contraindicate operative treatment for prolapse, but they may call for modifications in surgical technique. In particular every effort should be made to avoid amputating the cervix at the time of colporrhaphy, for this may lower fertility, cause abortion, or complicate labour. Indeed, every delivery following amputation of the cervix should be carried out in hospital.

If the operation is restricted to anterior and posterior colporrhaphy, subsequent pregnancies are not likely to be complicated and the risk of a recurrence of prolapse is not very high. It is usually advisable, however, to carry out episiotomy in labour. Even if the prolapse should recur after further childbearing and require another operation, the original operation is not to be regarded as a waste of time. It is unreasonable to condemn women to endure a prolapse for many of what should be their most active years, their only consolation being that they will be made comfortable when they reach an age at which the comfort means less to them.

Dangerous Mouse Poisons

Q.—*A culture of Salm. enteritidis is being used for destroying mice in food shops. Is this practice dangerous? If so, what alternative is suggested? Red squill has proved ineffectual.*

A.—Two varieties of *Salm. enteritidis*, the *jena* and *danysz*, have been used. The former, which may not have been used since 1949, is among the four commonest causes of salmonella food-poisoning. The *danysz* variety, a less common cause, was responsible for an outbreak affecting 300 persons in 1950. As living cultures are used, the organisms may be transferred to food by man and also by the faeces of infected mice. This method should never be used in places where food is prepared, sold, or stored.

Although it is useful against rats, red squill is not recommended for use against mice. Trapping and the use of poisons can each be effective. If trapping is done a large number of traps should be used. These should be of the "treadle" or break-back type, baited and set on the first night. Suitable baits are National flour, bread crumbs, or rolled oats. Cheese is not recommended. For poison baiting a large number of ¼-oz. (7.5-g.) baits of damp rolled oats or damp sausage rusk containing either 2½% zinc phosphide or 10% arsenious oxide by weight can be used. It is advisable to lay plain unpoisoned baits at first, but if these are well taken poison baits can be laid on the second night. Otherwise prebaiting should continue for two or three days. In places where a damp bait is unsuitable, it is found that a mixture of 9 parts by weight of National flour with 1 part by weight of castor sugar is satisfactory. If there are survivors a second treatment, using a different poison, should be carried out after 14 days. Such poison baits involve some risk and should normally be used only by trained operators, such as those employed by local authorities and commercial servicing companies. Alternatively baits containing "warfarin," which involve very little risk to man, can be used. This anticoagulant is mixed with dry oatmeal, in a concentration of about 0.025% of warfarin. The bait is left in suitable containers for not less than five days or, preferably, until no more takes occur. Further information on methods of controlling mice can be obtained from the Infestation Control Division of the Ministry of Agriculture and Fisheries or from the local sanitary authorities.

Carpal Tunnel Syndrome

Q.—*What is meant by the term carpal tunnel syndrome? How is the syndrome recognized, and what is the treatment and prognosis?*

A.—The carpal tunnel syndrome is a recently described clinical condition consisting in pain of a peculiar burning or tingling type felt particularly in the thumb side of the hand in the area of distribution of the median nerve. The pain is particularly prone to arise at night, to waken the patient from sleep, and to be relieved by exposing the hand outside the bedclothes or by hanging the whole arm down outside the bed. A very diffuse radiation of pain is quite common; the pain often spreads widely and vaguely up the arm. The patient is most often a middle-aged woman, and the syndrome is one of the several conditions which have previously been labelled acroparaesthesia and for which non-existent cervical ribs or fanciful syndromes, such as those due to pressure by the scalenous anterior, have been blamed in the past.

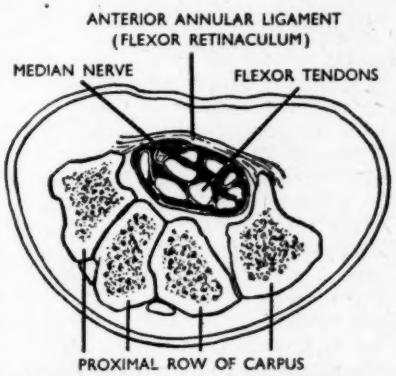

Diagram of transverse section through the carpal tunnel showing the median nerve in its vulnerable position in a very confined space.

In a well-established case of the carpal tunnel syndrome it is quite common to see a little wasting of the most radial of the intrinsic muscles of the thumb. This wasting, affecting the opponens pollicis, produces a slight depression on the ulnar side of the first metacarpal bone. The syndrome is due to compression of the median nerve in the carpal tunnel. The diagram shows how this nerve lies in a small space, which it shares with the flexor tendons of the fingers and thumb. If any thickening of the bones or of the anterior annular ligament produces a constriction of this space, the median nerve, which is more compressible than the tendons, suffers. It is also believed that thickening and swelling of the tendons from tenosynovitis can similarly produce pressure on the median nerve in this confined space.

Treatment of the carpal tunnel syndrome is simple. All that is required is complete division of the anterior annular ligament. The nerve is thereby decompressed and the pain is cured permanently and dramatically, even in patients who have suffered it for 14 years or more.

Saccular and Cylindrical Bronchiectasis

Q.—*Is the aetiology of saccular and of cylindrical bronchiectasis the same? Does the distinction between the two types depend simply on the radiological appearance, or are there other criteria?*

A.—There is probably no difference in the aetiology of the two types, the saccular bronchiectasis representing those cases in which either the collapse is more extensive or the main part of the compensatory changes falls on the bronchi.

The distinction between the two types depends entirely upon the radiological appearance. The pathological differences show that the walls of the saccules do not contain cartilage, whereas those of the cylindrical type do, but the probability is that a saccule is a dilated terminal bronchiole which does not contain cartilage in its normal state, and in the cylindrical cases dilatation is in the larger bronchi, which, of course, normally contain cartilage.

Antibiotics in Renal Tuberculosis

Q.—*What regime of antibiotic therapy is advised for cases of renal tuberculosis? What are the chances of drug resistance developing, and how is it best avoided?*

A.—Although antibiotic therapy forms part of the treatment of almost every case of renal tuberculosis it must not be assumed that it has replaced nephrectomy as the main curative measure. When there is a cavity demonstrable by radiography the lesion will not heal under antibiotics alone. The cases most suitable for antibiotic therapy without nephrectomy are those of "tuberculous bacilluria" where no lesion can be demonstrated on either side, those with minor unilateral disease showing minimal pyelographic changes, and those of bilateral disease affecting both sides equally, for which surgery is contraindicated. Streptomycin should also be given as a pre-operative and post-operative measure to patients who undergo nephrectomy.

The usual regime is 0.5 g. of streptomycin by intramuscular injection twice daily up to a total of 90 g.; the total amount should be reduced if vestibular symptoms appear. Alternatively a single dose of 1 g. every third day has been used, and improved results have been claimed from the prolongation of the course. Potassium citrate, in sufficient quantity to keep the urine alkaline, aids the action of streptomycin. Bacterial resistance to the drug does develop in a number of cases; it may be avoided or delayed by giving P.A.S. concurrently with the streptomycin in doses increasing to 4 g. three times a day. Rest, a liberal diet, and an approach towards a sanatorium regime will also aid healing. Treatment should be continued for at least six months and progress checked by monthly examination of the urine and six-monthly excretion urograms. Cystoscopy, when necessary, should be done under streptomycin cover.

Treatment of Homosexual Tendencies

Q.—*I have a male patient, aged* 18, *who has noticed for several years that his interests have been more akin to those of a girl than a boy. This tendency extends to his sexual interests, in that he is more attracted to men than to women, but is more at ease in the company of the latter. His primary and secondary male sexual characteristics seem to be fully developed. Can anything be done to help?*

A.—An expert psychiatric opinion is always necessary before deciding whether homosexual tendencies which persist well after puberty represent a reversible or an irreversible disposition. A psychiatrist usually finds that narco-analytical exploration on one or more occasions is of the greatest help in enabling him to make a decision. Even if it appears unlikely that analytical psychotherapy would be successful in effecting a thoroughgoing reorientation, skilled psychotherapy can always be counted on to help the patient to make a satisfactory social and moral adjustment to his disability.

Unusual Reaction to a Strychnine Tonic

Q.—*A man of 64 was given a tonic containing 1/27 gr. (2.4 mg.) strychnine to the 1/2 oz. (14 ml.). Within two minutes of taking the medicine he complained of generalized itching all over, went outside, and collapsed, where he was found ten minutes later unconscious and foaming at the mouth. One hour later I saw him; he was cold, pulse 50 to 60 a minute, of rather poor volume, his reflexes were present and his plantar response flexor. He came round fairly quickly and his arms gave one or two "jerks." Later in hospital I could find no gross disease: blood pressure 150/100. He did the same thing apparently on "metatone," which contains even less strychnine. He did not look like textbook strychnine poisoning: what was it?*

A.—An overdose of strychnine gives rise to symptoms quite different from those described in the question. The picture closely resembles the manifestations seen in patients who are hypersensitive to a drug—that is, symptoms represent an allergic response: some, if not all, of the symptoms are due to histamine release. Several observers have recently recorded this type of reaction to injections of procaine penicillin, but almost any organic compound may act as a sensitizing agent. The standard textbooks do not describe similar cases to the one recorded in the question, and it must be very rare for strychnine to behave in this way.

NOTES AND COMMENTS

Dangers from the Use of Relaxants in E.C.T.—Dr. N. F. COCKETT (Coventry) writes: I hope that my temerity may be pardoned, but I would disagree with your expert in the answer given to a query about the dangers attached to the use of muscle-relaxants and intravenous barbiturates for E.C.T. ("Any Questions?" May 2, p. 1005). It is stated that the only risk is from respiratory arrest, but I should have thought that there was also a real danger of regurgitation of stomach contents. Regurgitation and vomiting are among the commonest causes of death under anaesthesia, as has been shown by a recent survey carried out by the Society of Anaesthetists, and an excellent article by Morton and Wylie[1] contains a few points on this subject worth perusal. These authors point out that the use of relaxants and thiopentone can lead to regurgitation, since the relaxation produced allows stomach contents to flow out by gravity, and they also list a number of conditions leading to the presence of material in the stomach, some of which obtain in patients attending for E.C.T. These are as follows: food and drink given prior to induction (is it not necessary, therefore, to make sure that the patient has had no food for at least four hours prior to the proposed E.C.T., not even "just a cup of tea"?); and prolonged emptying time of stomach, which may be due to emotional stress, which is surely not uncommon in patients attending for E.C.T., or to pyloric obstruction, which is a sufficiently common condition to warrant a few preliminary inquiries about any "history" which might lead one to suppose that this was present. In view of all this, would it not be advisable before embarking on the use of relaxants and barbiturates in any particular case to make as sure as possible that the stomach is empty, and to have at hand facilities to deal with regurgitation should it occur—namely, an efficient mechanical sucker, a laryngoscope, and endotracheal tubes?

REFERENCE

[1] *Anaesthesia*, 1951, 6, 190.

Correction.—The price of *Polyglot Medical Questionnaire*, by S. Chalmers Parry, is 12s. 6d., not 18s. 6d. as stated at the head of the review published in the *Journal* of May 16 (p. 1092).

Acknowledgments.—The portrait photograph of the Queen facing p. 1207 is by Dorothy Wilding. On p. 1213 the photograph of the Queen laying the memorial stone at the Royal College of Surgeons is a *Daily Herald* copyright photograph, and that taken at St. Hyacinthe Hospital is a Canadian official photograph. Barratts Photo Press Agency supplied the picture taken at the Royal College of Surgeons in 1951, the Graphic Photo Union that taken at the Royal College of Obstetricians and Gynaecologists, and the "Topical" Press Agency Ltd. that taken in Nairobi.

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